Natural Resources Scoping Meeting

for

Sand Creek Massacre National Historic Site

April 8-9, 2003
Eads, Colorado

AGENDA
Natural Resources Scoping Meeting
Sand Creek Massacre National Historic Site

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April 8-9, 2003

Tuesday, April 8

8:00 am - 11:30 am	Field Trip to Sand Creek Massacre Site and Historical Overview...Bill Dawson and Laird Cometsevah
Noon	Lunch at the Community Center
1:00 pm – 5:00 pm	*Introductions by all Participants *Overview of Meeting Purpose...Alexa Roberts *Legislation Land Status and Where We Are In the Process of Establishment...Alexa Roberts *Overview of Each Agency/Participant What each agency does. What each agency has (data bases, etc.) What is each agency's interest in Sand Creek? What does NPS need to know or be aware of at Sand Creek for natural resources management purposes? *Current environmental status of the land...Landowners, NRCS, Division of Wildlife, City of Eads, Kiowa County. *What do we know about 1864 environmental conditions? Fran Pannebaker, Bill Dawson, Ben Berlinger, Greg Sherman, Tribal Representatives.

Wednesday, April 9

8:00 am – 11:30 am	* PowerPoint Presentation on GIS model of Sand Creek...Dave Hammond, NPS Topics for general discussion: Water: creek, springs, ground water, etc. Wildlife and endangered species: prairie chickens, prairie dogs, burrowing owls, etc. Air Quality/View sheds Grasses/Range/Grazing/Buffalo/Cattle/etc Trees/Exotic Plants Fire Management
11:30 – 1:00	Lunch at Our Place
1:00 – 3:00	Where Do We Go From Here? • Immediate Projects • Plans • Compliance with NEPA, etc • Funding • Sharing contact information What is the next step?

3:00 Adjourn

Thank You! Drive Safely!

INVITATION LIST

National Park Service - Denver, Colorado, Regional Office
Pam Benjamin, Vegetation Ecologist
Pete Biggen, Soil Scientist, Soils Inventory Coordinator
Mike Britten, Ecologist, Inventory and Monitoring Coordinator
Tim Connors, Geologist – Geological Inventory Coordinator
Dave Hammond, Fire Global Information System (GIS) Specialist
Cay Ogden, Wildlife Biologist
John Reber, Physical Scientist/Air and Water
Kathy Tonnessen, Research Coordinator
Chris Turk, Regional Environmental Quality Coordinator
Janet Wise, Natural Resource Program Supervisor

National Park Service - Bent's Old Fort, NHS
Dr. Dexter Hess, Biologist
Fran Pannebaker, Natural Resource Specialist
Karl Zimmermann, Park Ranger

National Park Service – Other Areas
Steve Burrough, Chief of Resource Management
Chickasaw National Recreation Area, Oklahoma
Rick Shireman, Superintendent and Chairman of the Board of Directors
Chickasaw National Recreation Area, Oklahoma
Adriane Peterson, Water Quality Data Analyst
Ft. Collins, Colorado office
Brian Carey, Chief of Resources Management and Visitor Protection
Lyndon B. Johnson, National Historic Park, Texas
Jill Cowley, Historical Landscape Architect
Santa Fe, New Mexico office
Craig Moore, Education Technician
Washita Battlefield National Historic Site, Oklahoma

Tribal Representatives

Lee Pedro, Southern Arapaho Sand Creek Representative
Alonzo Sankey, Southern Arapaho Sand Creek Representative
Joe Big Medicine, Representative, Southern Traditional Sand Creek Cheyenne Descendents
Laird Cometsevah, Representative, Southern Traditional Sand Creek Cheyenne Descendents
Mildred Red Cherries, Vice Chairperson, Northern Cheyenne Band of Sand Creek Descendents
Steve Brady, President, Northern Cheyenne Band of Sand Creek Descendents
Gail Ridgely, Representative, Northern Arapaho Tribe
Eugene Ridgely, Sr., Representative, Northern Arapaho Tribe

PARTICIPANT LIST

National Park Service - Denver, Colorado, Regional Office
Tim Connors, Geologist, Geological Inventory Coordinator
Dave Hammond, Fire Global Information System (GIS) Specialist
Cay Ogden, Wildlife Biologist
John Reber, Physical Scientist/Air and Water

National Park Service - Bent's Old Fort, NHS
Dr. Dexter Hess, Biologist
Fran Pannebaker, Natural Resource Specialist
Karl Zimmermann, Park Ranger
Melissa Stoltz, Curator

National Park Service – Other Areas
Craig Moore, Education Technician
Washita Battlefield National Historic Site, Oklahoma
Maggie Johnston, Superintendent
Capulin Volcano National Monument (representing SPON I&M Network)

Tribal Representatives
Lee Pedro, Southern Arapaho Sand Creek Representative
Alonzo Sankey, Southern Arapaho Sand Creek Representative
Joe Big Medicine, Representative, Southern Traditional Sand Creek Cheyenne Descendents
Laird Cometsevah, Representative, Southern Traditional Sand Creek Cheyenne Descendents
Linda DeCarlo, Southern Cheyenne Sand Creek Representatives' Secretary
Gail Ridgely, Representative, Northern Arapaho Tribe
Eugene Ridgely, Sr., Representative, Northern Arapaho Tribe
Robert Goggles, Northern Arapaho Spiritual Advisor
Edward Willow, Northern Arapaho Spiritual Advisor

Kiowa County/Town of Eads, Colorado
Rod Brown, Kiowa County Commissioner
Dutch Eikenberg, Kiowa County Commissioner
Vern Harris, Kiowa County Commissioner
Van Brown, Director of Public Works
Janet Frederick, Kiowa County Economic Development Foundation

Colorado State University
Bruce Fickenscher, Colorado State University Extension Agent
Mark Thorne, Extension Ranger and Livestock Specialist, Rocky Ford, Colorado
Leonard Pruett, Colorado State University Extension Agent, Lamar

Natural Resources Conservation Service
Ben Berlinger, Area Range Conservationist, La Junta, Colorado

Sand Creek Massacre National Historic Site
Natural Resources Scoping Meeting
April, 2003
Eads, Colorado
Summary

Natural Resources Data/Assistance Available by Agency/Program:

NATIONAL PARK SERVICE

Service-wide Natural Resources Programs

The Natural Resource Program Center (NRPC) serves the NPS nation wide (7 Regions), but its programs are based out of Denver and Ft. Collins, CO. Administratively, it is under the NPS Associate Director for Natural Resource Stewardship and Science, in Washington, D.C.

Natural Resource Program Center:

- Geological Resources Division
- Water Resources Division
- Air Resources Division
- Biological Resources Management Division
- Environmental Quality Division
- Natural Resource Information Division

Intermountain Region Programs, Resources, Available Data: (Based out of Denver, CO)

Provides support services to 89 parks in Intermountain Region (Montana, Wyoming, Utah, Colorado, Arizona, New Mexico, Texas and Oklahoma)

Natural Resources, Research and Technology (Bob Moon, Chief)

Natural Resources Program (Janet Wise, Program Supervisor);
Provides technical assistance to parks and brokering between NPS and other agencies

Resource disciplines within the program:

- Physical Science/Air and Water (John Reber)
- Hydrology (Colleen Filippone)
- Fisheries Biology (Melissa Trammel)
- Restoration and Plant Ecology (Pam Benjamin)
- Wildlife Ecology/T&E Coordinator (Cay Ogden)
- Biological Science (Larissa Reed)
- Environmental Protection (Michael George)

resource features, vegetation and other layers can be developed and "laid over" the base layers.

Scanned USGS 7.5 min quad maps are basic source.
Digital elevation model, scope, aspect, viewshed models,
Boundaries, roads, pipelines.
Digital aerial photos – orthoquads (DOQQ's) 6-quads from USGS – 1998 photos
Land ownership layer – township, range, section data
From BLM at ¼ quadrangles

Contact:
Dave Hammond, Fire GIS Specialist
NPS-IMDE-NT
12795 W Alameda Pkwy
Lakewood, CO 80228
phone: (303) 969-2953
fax: (303) 969-2037
email: dave_hammond@nps.gov

(Other sources of GIS data for SAND and SE Colorado are attached below.)

Research Coordination
This program includes NPS natural and cultural resource research coordinators at cooperating universities throughout the Intermountain Region. Refer to the CESU Program, below, for additional information.

Inventory and Monitoring (Mike Britten)
This program oversees several Inventory and Monitoring Networks throughout the Region. See Southern Plains Network (SOPN) below, for additional information.

Contacts for Intermountain Region Natural Resources Program, GIS, Research Coordination, and Inventory and Monitoring Programs:

Bob Moon - Chief, Natural Resources & Technology | 303 969-2856
Kathy Tonnesson - CESU, Rocky Mountain | 406 243-4449
Theresa Ely - GIS Program Supervisor | 303 969-2653
Mike Britten - Inventory and Monitoring | 303 987-6705
Janet Wise - NR Program Supervisor | 303 969-2970
Larissa Read - NR, Biological Science Tech | 303 969-2518
Michael George - NR, Environmental Protection (AIR) | 512 471-5722
Melissa Trammell - NR, Fishery Biologist | 801 639-4255
Colleen Filippone - NR, Hydrologist | 502 546-1607
Gerald McCrea–NR, Integrated Pest Management/Invasive Species|505 988-6024
John Reber - NR, Physical Sciences/Air & Water | 303 969-2418

Johnson City, TX 78636
Ph: 830-868-7128 x281
Fx: 830-868-7798

Cooperative Extension Study Units (CESU):

The CESUs are networks of universities and colleges that can provide research services to parks depending on specific park needs. The networks are based on biogeographic regions. Sand Creek (SAND) is within the Great Plains CESU but is currently receiving assistance from the Rocky Mountain CESU. SAND has submitted proposals for CESU research assistance for an environmental history of the Sand Creek site, and with a dendrochronology project to date the cottonwood trees at the Sand Creek site. Additional research needs can be listed on a CESU website to match researchers with specific park research needs. Many of the projects are ideal for multi-agency partnerships.

Contact:
Kathy Tonnesson, Research Coordinator (Natural Resources)
Intermountain Region
(406) 243-4449
kat@forestry.umt.edu
Website: http://www.forestry.umt.edu/research/cesu/default.htm

Local NPS Resources

Bents Old Fort National Historic Site (BEOL):

SAND has a Memorandum of Understanding with BEOL through which Sand Creek receives technical assistance from BEOL programs. The BEOL Natural Resources programs provides assistance to SAND with inventory and monitoring, exotic plant control, liaison with work crews, writing and submitting proposals for funding, meeting Service-wide and Regional reporting requirements, compliance with federal environmental statutes, and nearly all other SAND natural resource needs. Beginning herbarium collection from SAND.

Contacts:
Fran Pannebaker, Natural Resource Specialist--719-383-5010 x 16
Karl Zimmermann, Park Ranger—719-383-5010 x14
402 Santa Fe Ave.
La Junta, CO 81050

Rocky Mountain National Park (ROMO):

SAND has an Interpark Agreement with ROMO for fire management activities. SAND is within the Front Range Fire Program Cluster, for which the Fire Management program at

This office has already assisted SAND in an evaluation and recommendation for erosion control measures at two locations within the NHS boundaries.

Contact:

Marvin Watson, Soil Conservationist
P.O. Box 845
Eads, CO 81036
719-438-5851 x101
marvin.watson@co.usda.gov

Bureau of Land Management

The BLM has been working with SAND on a cadastral survey of all federally owned lands within the SAND NHS boundaries. All survey data are digitized and can be provided to NPS to be included in the SAND GIS database. BLM is also providing 1880 General Land Office survey notes for the Sand Creek area, which includes notations about vegetation noted at the time.

Contact:

Joseph Velasquez, Cadastral Surveyor
Royal Gorge Field Office
3170 East Main
Canon City, CO 81212
719-269-8556

USFWS?

Riparian maps

CHEYENNE AND ARAPAHO TRIBES

The Cheyenne and Arapaho Tribes include the Southern Cheyenne and Arapaho Tribes of Oklahoma., the Northern Arapaho Tribe of Wyoming and the Northern Cheyenne Tribe of Montana. All four tribes include descendents of the 1864 Sand Creek Massacre and are integral partners in the development of the National Historic Site. (As of December 19, 2003, the Cheyenne and Arapaho Tribes of Oklahoma own 1465 acres of land within the NHS boundaries) The three tribal governments include various cultural and natural resources management programs, farm and ranch programs, etc. The descendents have direct traditional and oral historical knowledge of the Sand Creek area, the history of its use, and its resources. Points made by representatives at the meeting include:

Colleen Cometsevah has been working on researching descendants since 1970
Oral historical knowledge
Can compare aerial photos with George Bent's maps of the Sand Creek village
Today offerings and prayers are still made

PO Box 803
Lame Deer MT 59043
Phone 406-477-6823
Fax 406-477-8324/6210

Laird Cometsevah, Southern Cheyenne Sand Creek Representative
1716 Prairie Chief
Clinton OK 73061
Home Phone 580-323-1913
Work Phone 580-323-0200
Fax 580-323-1643 (Sr. Center)

Joe Big Medicine, Southern Cheyenne Sand CreekRepresentative
500 South Leach, Apt. 36
Watonga OK 73772
Phone 580-623-5052
Fax 580-623-5005 (Carl's Apple Mkt)
Cell 580-623-0401
E-mail: holybird@itinet.net

William Lee Pedro, Southern Arapaho Sand Creek Representative
PO Box 41
Concho OK 73022
Phone 405-262-1770

Alonzo Sankey, Southern Arapaho Sand Creek Representative
PO Box 836
Canton OK 73724
Phone 580-886-2984

COLORADO STATE GOVERNMENT

Division of Wildlife

Any wildlife related issues on the site
Assist with any inventories and surveys
Past, present, and future management of wildlife
Fishes – state listed species in Sand Creek drainage
Prairie chickens
Historic with site boundary – would like to restore native population -breeding bird survey
Natural Diversity Information System – statewide system – can look up species – also vegetation or wildlife patterns, threatened and endangered species. Shows actual locations of species.
Wildlife Resource Management System
Habitat biology – working with landowners on specific issues to benefit wildlife
Can assist with returning to historic conditions, also habitat improvement,

Colorado Department Of Transportation
transportation information available online: http://www.dot.state.co.us

KIOWA COUNTY

Kiowa County Commissioners

Road issues
What improvements are going to be necessary?

Contacts:

Rod Brown
Vern Harris
Dutch Eikenberg
PO Box 100
Eads, CO 81036
719-438-5810

Kiowa County Economic Development Foundation

Intermediary among Kiowa county and other parties
Trying to keep development sensible and appropriate
Source for county demographics, statistics, etc.

Contact:

Janet Frederick, Executive Director
KCEDF
PO Box 250
Eads, CO 81036
719-438-2200

Fire Department

SAND has a Memorandum of Agreement with the Kiowa County Fire Department to provide fire suppression services at SAND. NPS provided a Rural Fire Department grant to the Kiowa County F.D. for equipment and training and is seeking additional grants.

Contact:

Jerry Shelden, Chief
Kiowa County Fire Department
719-438 -5808

Sheriffs Department

Kiowa County Sheriff's Department (and Colorado Division of Wildlife, for some matters) has full jurisdiction for law enforcement within the boundaries of SAND, at least until the site becomes formally established.

other services NPS might need. Not constrained by MOA's etc. – available to assist anyone.

Western Environment and Ecology Inc.'s preliminary report on 1864 environmental conditions could look at:

Vegetation
Herbarium collections – University of Nebraska
Letter, diaries
Lt. Abert, US Army, records for Bent's Old Fort
George Vessy, curator and botanist collected and published flora of Eastern Colorado
Railroad surveys may have included vegetation
GLO survey's
Natural Resources/Cultural Resources Bibliographies
Does Long expedition contain any descriptions? Also Pike?

RMC Consultants, Inc.
Contracted by NPS Lands Resources Program to evaluate the presence of hazardous materials on the Druck (Dawson) property so that NPS could enter into management agreement with Mr. Druck. Completed Phase I Environmental Site Assessment – Sand Creek Massacre National Historic Site Tracts 101-10 and 101-11. Report on file, NPS, SAND Office, Eads

A few sources of GIS data for parks and/or eastern Colorado (by Dave Hammond, Fire GIS Specialist, NPS, Intermountain Region, February, 2003)

The website for the NPS Inventory and Monitoring (I&M) program is:
http://www1.nature.nps.gov/im/index.html
In there, you can find GIS downloads available through FTP at
http://www3.nature.nps.gov/im/gis/ftp/ftparchive.cfm
At this site the 'raw' USGS GIS data is posted by 7.5 min quad including boundary, hydrology, transportation data etc. and also "DRG"s (the scanned USGS 7.5 min topographic maps).

Other bibliographies & lists of data are available through I&M at
http://www1.nature.nps.gov/im/inventory/index.htm

The NPS GIS clearinghouse at:
http://www.nps.gov/gis/data_info/clearinghouse.html
Various park related data, unique datasets to each park. Click on a state from the national map to bring up a map for that state with each park shown on it. Click on the park you're interested in and you will see what data is available. Before a park's GIS data is posted to this site it must have metadata. A number of parks are still developing metadata for their data and so there may not be anything posted for a park.

ISSUES/RECOMMENDATIONS

- Soils for cemetery
  - Discuss with NRCS – soil survey
  - Floodplain maps from FEMA
  - Need translation into digital layer – GRD can do from NRCS soil study
  - Put all data into GIS to document what is there

- Oil and gas on neighboring lands – expertise in GRD office

- Wildlife data layers
  - Species locations
  - Risk system
  - CDW has ENDIsystem and threatened and endangered species
    - Shows actual locations of species

- GAP vegetation maps – based on infrared and aerial maps
  - Riparian maps from USFWS
  - GIS person in Colorado Springs

- Consider impact of human use – 1864 tribal camp (100 lodges) on vegetation and appearance of landscape

- Stabilize erosion – to preserve topography

- Exotics – some species may not be much of concern

- Look for exclusion areas (areas that have not been modified for a long time)– cemetery or fence corners – use soil reports

- Presence of water and spring – site might have been more impacted by greater/higher presence of wildlife, horses, tribal camps

- Look at when farming stopped

- Ask former landowner (Dawson) about his reseeding efforts

- Successional species may be important for reestablishing natives

- Erosion and fire – 2 worst natural hazards for managing the site

- Can use range condition ecological models developed by NRCS to help see what might happen at the site –a bench mark for historical climax community – with influences modeled

- Need to determine significance of flows in Sand Creek to restoration of site.

- Plant species restored to site should be a concern to neighbors – noxious weed could come in from outside i.e. spurge knapweed

- Wildlife
  - Build fences that are wildlife friendly
  - There used to be prairie dogs on site on tighter soil
  - At previous consultation meeting in Denver agreed to NO prairie dogs
  - Prairie dogs do not prefer sandy sites

- **First priority to get vegetation in order**
  Habitation restoration will draw in wildlife

- Wild pigs
  - In Sand Creek drainage – concern
  - 10-15 pigs 4 years ago, now 50+
  - Detrimental species – considered by state

- Hunting and trespass concerns

- Get Colorado DOW and NRCS to reestablish species on neighboring willing lands

- 11 towns upstream of Sand Creek site on Big Sandy
- 1 town downstream of Sand Creek site on Rush Creek

- Need more detailed soil maps – contract with NRCS @ ½ acre scale

- Continue to remove fences as property is acquired

WHAT TO DO NOW?
(As of April, 2003)

- Get on NPS Regional Inventory and Monitoring List for I&M assistance
- Bent's Old Fort can begin monitoring of
  - riparian areas
  - shrub lands
  - short grass prairie
  - fire
- Begin plant list/gathering baseline data
- NPS Exotic Plant Management Team can begin identifying exotic plants and can begin to spray with proper approvals
- Need to interact with NPS Natural Resources Research Database
- Tamarisk Control

- Get Rocky Mountain National Park to work on Fire Management plan
- Plan prescribed burn plots
- Exotic plant removal/ tamarisk removal underway
- Install long term plant transects
- Install surface water gauge
- Use Volunteers for Outdoor Colorado to remove downed branches
- Made little habitat piles from plant debris around house
- Memorandum of Agreement with Kiowa County for fire management
- Complete clean up around former Dawson house
- Debris cleanup throughout property
- Remove old school bus on NPS property

THINGS DONE SINCE APRIL, 2003 MEETING

- Western Environment and Ecology Inc.'s preliminary report completed (attached)
- Evaluation of erosion mitigation needs by Natural Resources Conservation Service
- Exotic plants (tamarisk and Russian Olive) removed
- Herbarium collection started by Bent's Old Fort Staff
- Paleontological resources report completed by NPS Geological Resources Division
- Funding Requests submitted to:
  - Rocky Mountain CESU for:
    - Dendrochronological dating of cottonwood trees
    - Environmental History of Sand Creek
  - American Battlefield Protection Program for Planning Grant
  - CCI for Resources Management Plan

EROSION CONTROL ASSESSMENT
MARVIN WATSON, SOIL CONSERVATIONIST
USDA NRCS

NPS asked Mr. Watson for assistance in making recommendations for erosion control at two sites within the Sand Creek Massacre NHS boundaries. One site is within the SE1/4 of the NE1/4 of Section 25, T17S R46W, the other in the NW1/4 of the SW1/4 of Section 24, T17S R46W. These site occur on valent loamy sand soil that is fragile and highly susceptible to wind and water erosion. Due to the extremely fragile nature of the soil and the continuing drought, NCRS recommends gully treatment by vegetative and management means rather than structural practices that require more surface disturbance and introduce the possibility of creating more erosion damage. The vegetative option is slower and less costly than other treatment options. The treatment measures recommended by Mr. Watson consists of four parts:

1) Minor shaping and smoothing by hand labor to create a more favorable seed bed.

2) Critical area seeding by broadcasting seed of adapted native grass species. The mix should include a fairly high percentage of sand bluestem, a warm season sodformer, and other species in conformance to the goals of NPS and the Cheyenne and Arapaho Tribes.

3) Mulching of the seeded area should enhance the grass establishment. Feedlot manure would be a mulch of choice, but logistics of delivery and application on the site which are not easily accessible by truck would make th is option difficult. Other options include straw, hay, or wood chips, all of which could be spread by hand with little surface disturbance.

3) Fencing may be necessary to prevent grazing and/or disturbance of the treated area and immediate upslope area.

Public Law 106–465
106th Congress

An Act

To authorize the Secretary of the Interior to establish the Sand Creek Massacre National Historic Site in the State of Colorado.

Nov. 7, 2000
[S. 2950]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Sand Creek Massacre National Historic Site Establishment Act of 2000.
16 USC 461 note.

SECTION 1. SHORT TITLE.

This Act may be cited as the "Sand Creek Massacre National Historic Site Establishment Act of 2000".

SEC. 2. FINDINGS AND PURPOSES.

(a) FINDINGS.—Congress finds that—

(1) on November 29, 1864, a peaceful village of Cheyenne and Arapaho Indians under the leadership of Chief Black Kettle, along Sand Creek in southeastern Colorado territory was attacked by approximately 700 volunteer soldiers commanded by Colonel John M. Chivington;

(2) more than 150 Cheyenne and Arapaho were killed in the attack, most of whom were women, children, or elderly;

(3) during the massacre and the following day, the soldiers committed atrocities on the dead before withdrawing from the field;

(4) the site of the Sand Creek Massacre is of great significance to descendants of the victims of the massacre and their respective tribes, for the commemoration of ancestors at the site;

(5) the site is a reminder of the tragic extremes sometimes reached in the 500 years of conflict between Native Americans and people of European and other origins concerning the land that now comprises the United States;

(6) Congress, in enacting the Sand Creek Massacre National Historic Site Study Act of 1998 (Public Law 105–243; 112 Stat. 1579), directed the National Park Service to complete a resources study of the site;

(7) the study completed under that Act—

(A) identified the location and extent of the area in which the massacre took place; and

(B) confirmed the national significance, suitability, and feasibility of, and evaluated management options for, that area, including designation of the site as a unit of the National Park System; and

(8) the study included an evaluation of environmental impacts and preliminary cost estimates for facility development, administration, and necessary land acquisition.

(b) PURPOSES.—The purposes of this Act are—

(1) to recognize the importance of the Sand Creek Massacre as—

(A) a nationally significant element of frontier military and Native American history; and

(B) a symbol of the struggles of Native American tribes to maintain their way of life on ancestral land;

(2) to authorize, on acquisition of sufficient land, the establishment of the site of the Sand Creek Massacre as a national historic site; and

(3) to provide opportunities for the tribes and the State to be involved in the formulation of general management plans and educational programs for the national historic site.

SEC. 3. DEFINITIONS.

In this Act:

(1) DESCENDANT.—The term "descendant" means a member of a tribe, an ancestor of whom was injured or killed in, or otherwise affected by, the Sand Creek Massacre.

(2) MANAGEMENT PLAN.—The term "management plan" means the management plan required to be developed for the site under section 7(a).

(3) SECRETARY.—The term "Secretary" means the Secretary of the Interior, acting through the Director of the National Park Service.

(4) SITE.—The term "site" means the Sand Creek Massacre National Historic Site established under section 4(a).

(5) STATE.—The term "State" means the State of Colorado.

(6) TRIBE.—The term "tribe" means—

(A) the Cheyenne and Arapaho Tribes of Oklahoma;

(B) the Northern Cheyenne Tribe; or

(C) the Northern Arapaho Tribe.

SEC. 4. ESTABLISHMENT.

(a) IN GENERAL.—

(1) DETERMINATION.—On a determination by the Secretary that land described in subsection (b)(1) containing a sufficient quantity of resources to provide for the preservation, memorialization, commemoration, and interpretation of the Sand Creek Massacre has been acquired by the National Park Service, the Secretary shall establish the Sand Creek Massacre National Historic Site, Colorado.

Federal Register, publication.

(2) PUBLICATION.—The Secretary shall publish in the Federal Register a notice of the determination of the Secretary under paragraph (1).

(b) BOUNDARY.—

(1) MAP AND ACREAGE.—The site shall consist of approximately 12,480 acres in Kiowa County, Colorado, the site of the Sand Creek Massacre, as generally depicted on the map entitled, "Sand Creek Massacre Historic Site", numbered, SAND 80,013 IR, and dated July 1, 2000.

(2) LEGAL DESCRIPTION.—The Secretary shall prepare a legal description of the land and interests in land described in paragraph (1).

(3) PUBLIC AVAILABILITY.—The map prepared under paragraph (1) and the legal description prepared under paragraph (2) shall be on file and available for public inspection in the appropriate offices of the National Park Service.

(4) BOUNDARY REVISION.—The Secretary may, as necessary, make minor revisions to the boundary of the site in accordance with section 7(c) of the Land and Water Conservation Act of 1965 (16 U.S.C. 460l–9(c)).

SEC. 5. ADMINISTRATION.

(a) IN GENERAL.—The Secretary shall manage the site in accordance with—

(1) this Act;

(2) the Act entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916 (39 Stat. 535; 16 U.S.C. 1 et seq.);

(3) the Act of August 21, 1935 (16 U.S.C. 461 et seq.); and

(4) other laws generally applicable to management of units of the National Park System.

(b) MANAGEMENT.—The Secretary shall manage the site —

(1) to protect and preserve the site, including —

(A) the topographic features that the Secretary determines are important to the site;

(B) artifacts and other physical remains of the Sand Creek Massacre; and

(C) the cultural landscape of the site, in a manner that preserves, as closely as practicable, the cultural landscape of the site as it appeared at the time of the Sand Creek Massacre;

(2)(A) to interpret the natural and cultural resource values associated with the site; and

(B) provide for public understanding and appreciation of, and preserve for future generations, those values; and

(3) to memorialize, commemorate, and provide information to visitors to the site to—

(A) enhance cultural understanding about the site; and

(B) assist in minimizing the chances of similar incidents in the future.

(c) CONSULTATION AND TRAINING.—

(1) IN GENERAL.—In developing the management plan and preparing educational programs for the public about the site, the Secretary shall consult with and solicit advice and recommendations from the tribes and the State.

(2) AGREEMENTS.—The Secretary may enter into cooperative agreements with the tribes (including boards, committees, enterprises, and traditional leaders of the tribes) and the State to carry out this Act.

SEC. 6. ACQUISITION OF PROPERTY.

(a) IN GENERAL.—The Secretary may acquire land and interests in land within the boundaries of the site —

(1) through purchase (including purchase with donated or appropriated funds) only from a willing seller; and

(2) by donation, exchange, or other means, except that any land or interest in land owned by the State (including a political subdivision of the State) may be acquired only by donation.

(b) PRIORITY FOR ACQUISITION.—The Secretary shall give priority to the acquisition of land containing the marker in existence on the date of enactment of this Act, which states "Sand Creek

Battleground, November 29 and 30, 1864", within the boundary of the site.

(c) COST-EFFECTIVENESS.—

(1) IN GENERAL.—In acquiring land for the site, the Secretary, to the maximum extent practicable, shall use cost-effective alternatives to Federal fee ownership, including —

(A) the acquisition of conservation easements; and

(B) other means of acquisition that are consistent with local zoning requirements.

(2) SUPPORT FACILITIES.—A support facility for the site that is not within the designated boundary of the site may be located in Kiowa County, Colorado, subject to an agreement between the Secretary and the Commissioners of Kiowa County, Colorado.

SEC. 7. MANAGEMENT PLAN.

Deadline.

(a) IN GENERAL.—Not later than 5 years after the date on which funds are made available to carry out this Act, the Secretary shall prepare a management plan for the site.

(b) INCLUSIONS.—The management plan shall cover, at a minimum—

(1) measures for the preservation of the resources of the site;

(2) requirements for the type and extent of development and use of the site, including, for each development —

(A) the general location;

(B) timing and implementation requirements; and

(C) anticipated costs;

(3) requirements for offsite support facilities in Kiowa County;

(4) identification of, and implementation commitments for, visitor carrying capacities for all areas of the site;

(5) opportunities for involvement by the tribes and the State in the formulation of educational programs for the site; and

(6) opportunities for involvement by the tribes, the State, and other local and national entities in the responsibilities of developing and supporting the site.

SEC. 8. NEEDS OF DESCENDANTS.

(a) IN GENERAL.—A descendant shall have reasonable rights of access to, and use of, federally acquired land within the site, in accordance with the terms and conditions of a written agreement between the Secretary and the tribe of which the descendant is a member.

(b) COMMEMORATIVE NEEDS.—In addition to the rights described in subsection (a), any reasonable need of a descendant shall be considered in park planning and operations, especially with respect to commemorative activities in designated areas within the site.

SEC. 9. TRIBAL ACCESS FOR TRADITIONAL CULTURAL AND HISTORICAL OBSERVANCE.

(a) ACCESS.—

(1) IN GENERAL.—The Secretary shall grant to any descendant or other member of a tribe reasonable access to federally acquired land within the site for the purpose of carrying out a traditional, cultural, or historical observance.

(2) NO FEE.—The Secretary shall not charge any fee for access granted under paragraph (1).

(b) CONDITIONS OF ACCESS.—In granting access under subsection (a), the Secretary shall temporarily close to the general public one or more specific portions of the site in order to protect the privacy of tribal members engaging in a traditional, cultural, or historical observance in those portions; and any such closure shall be made in a manner that affects the smallest practicable area for the minimum period necessary for the purposes described above.

(c) SAND CREEK REPATRIATION SITE.—

(1) IN GENERAL.—The Secretary shall dedicate a portion of the federally acquired land within the site to the establishment and operation of a site at which certain items referred to in paragraph (2) that are repatriated under the Native American Graves Protection and Repatriation Act (25 U.S.C. 300 et seq.) or any other provision of law may be interred, reinterred, preserved, or otherwise protected.

(2) ACCEPTABLE ITEMS.—The items referred to in paragraph (1) are any items associated with the Sand Creek Massacre, such as—

(A) Native American human remains;
(B) associated funerary objects;
(C) unassociated funerary objects;
(D) sacred objects; and
(E) objects of cultural patrimony.

(d) TRIBAL CONSULTATION.—In exercising any authority under this section, the Secretary shall consult with, and solicit advice and recommendations from, descendants and the tribes.

SEC. 10. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated such sums as are necessary to carry out this Act.

Approved November 7, 2000.

LEGISLATIVE HISTORY—S. 2950:

SENATE REPORTS: No. 106–418 (Comm. on Energy and Natural Resources).
CONGRESSIONAL RECORD, Vol. 146 (2000):
Oct. 5, considered and passed Senate.
Oct. 23, considered and passed House.

○

Calendar No. 827

106TH CONGRESS
2d Session

SENATE

REPORT
106–418

SAND CREEK MASSACRE NATIONAL HISTORIC SITE ESTABLISHMENT ACT OF 2000

SEPTEMBER 25 (legislative day, SEPTEMBER 22), 2000.—Ordered to be printed

Mr. MURKOWSKI, from the Committee on Energy and Natural Resources, submitted the following

REPORT

[To accompany S. 2950]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 2950) to authorize the Secretary of the Interior to establish the Sand Creek Massacre National Historic Site in the State of Colorado, having considered the same, reports favorably thereon with amendments and recommends that the bill, as amended, do pass.

The amendments are as follows:

1. On page 1, line 9, strike "Northern and Southern".
2. On page 1, lines 9 and 10, strike "Indians" and insert in lieu thereof "Indians under the leadership of Chief Black Kettle,".
3. On page 2, line 10, strike ",".
4. On page 3, line 22, strike "for tribes" and insert in lieu thereof "for the tribes and the State".
5. On page 4, line 19, strike "Cheyenne Tribe" and insert in lieu thereof "Cheyenne and Arapaho Tribes".
6. On page 4, line 20, strike subsection "(B)" in its entirety and redesignate the following subsections accordingly.
7. On page 7, line 20, strike "with the" and insert in lieu thereof "with and solicit advice and recommendations from the".
8. On page 8, strike subsection "(b)" in its entirety and redesignate the remaining subsections accordingly.
9. On page 10, line 14, strike "Special".
10. On page 10, line 15, strike "special" and insert "reasonable".
11. On page 10, line 21, strike "special" and insert "reasonable".
12. On page 11, line 11, strike all of subsection (b) through page 11, line 24, and replace with:

"(b) CONDITIONS OF ACCESS.—In granting access under subsection (a), the Secretary shall temporarily close to the general public one or more specific portions of the site in order to protect the privacy of tribal members engaging in a traditional, cultural, or historical observance in those portions; and any such closure shall be made in a manner that affects the smallest practicable area for the minimum period necessary for the purposes described above.".

13. On page 12, line 21, strike "tribes located in the vicinity of the site." and insert in lieu thereof "the tribes.".

PURPOSE OF THE MEASURE

The purpose of S. 2950 is to authorize the Secretary of the Interior to establish the Sand Creek Massacre National Historic Site in the State of Colorado.

BACKGROUND AND NEED

On November 29, 1864, a village of about 500 Cheyenne and Arapaho Indians along Sand Creek in southeastern Colorado was attacked by approximately 700 volunteer soldiers commanded by Colonel John M. Chivington. More than 150 Cheyenne and Arapahos were killed in the attack, mostly women, children, and the elderly. During that afternoon and the following day, the soldiers followed up the massacre by committing atrocities on the dead before withdrawing from the field.

The massacre remains a matter of great historical, cultural and spiritual importance to the Cheyenne and Arapaho Tribes, and is a pivotal event in the history of relations between the Plains Indians and Euro-American settlers.

The Sand Creek Massacre National Historic Site Study Act (Public Law 105–243) directed the National Park Service, in consultation with the State of Colorado, the Cheyenne and Arapaho Tribes of Oklahoma, the Northern Cheyenne Tribe, and the Northern Arapaho Tribe, to complete two tasks. First, the Act directed the Park Service to "identify the location and extent of the massacre area." Second, the Act directed the Park Service to prepare a report that assessed the national significance of the Sand Creek Massacre site, the suitability and feasibility of designating it as a unit of the National Park System, and a range of alternatives for the management, administration, and protection of the area.

The first of these tasks was addressed in a separate report entitled Sand Creek Massacre Project, Volume 1: Site Location Study. In the Site Location Study, the National Park Service, the State of Colorado, the Northern Cheyenne Tribe, the Northern Arapaho Tribe, and the Cheyenne and Arapaho Tribes of Oklahoma agreed on the location and extent of the massacre. The area lies in Kiowa County, Colorado. It encircles a running engagement and extends approximately 5 ½ miles in length and 2 miles in width. Included within this boundary are key features of the massacre, including the Cheyenne and Arapaho village site, the "sandpits" area where the fiercest fighting took place, the area of Indian flight, and the point from which Colonel Chivington and his troops launched their attack upon the Indian encampment.

The Special Resource Study/Environmental Assessment addresses the national significance of the Sand Creek Massacre site and the suitability and feasibility of designating it as a unit of the National Park System. The study also identified alternatives for the management of the site, and the impacts of those alternatives. The study found that the Sand Creek Massacre site meets all of the criteria used to determine the national significance of a natural, cultural, or recreational resource with the respect to inclusion within the National Park System. Furthermore, the study found that the site is both suitable and feasible for inclusion as a unit of the National Park System, and identified a range of alternatives under which the site could be managed.

S. 2950 authorizes the establishment of the Sand Creek Massacre National Historic Site as a unit of the National Park System, consisting of approximately 12,480 acres in Kiowa County, Colorado. The measure provides descendants of the massacre and members of specific tribes with special access and use rights for commemorative activities and for the purpose of carrying out traditional, cultural, or historic observances. In addition, the measure requires that a certain portion of the land within the site be dedicated for the repatriation of Native American human remains and other items associated with the Sand Creek Massacre.

LEGISLATIVE HISTORY

S. 2950 was introduced by Senator Campbell on July 27, 2000. The Subcommittee on National Parks, Historic Preservation and Recreation held a hearing on S. 2950 on September 14, 2000. At the business meeting on September 20, 2000, the Committee on Energy and Natural Resources ordered S. 2950 favorably reported, as amended.

COMMITTEE RECOMMENDATION

The Committee on Energy and Natural Resources, in open business session on September 20, 2000, by a unanimous vote of a quorum present, recommends that the Senate pass S. 2950, if amended as described herein.

COMMITTEE AMENDMENTS

During the consideration of S. 2950, the Committee adopted several amendments to make technical and clarifying changes, and also adopted several amendments making substantive changes to the bill.

An amendment was adopted clarifying the role of the State of Colorado and the tribes in developing the park's management plan and educational programs. Another amendment was adopted to delete a provision in the bill that would have required the Secretary of the Interior to permit the continuation of traditional agricultural and ranching activities on privately owned lands within the boundaries of the site. Since the Secretary does not have the authority to prohibit such activities on privately owned land, the provision was unnecessary.

Finally, an amendment was adopted deleting language in the bill that would have required the Secretary to consult only with tribes located in the vicinity of the site when addressing the access needs

and rights of descendants regarding traditional, cultural, or historical observances. Since there are no tribes located in the vicinity of the site, the language was corrected to simply refer to the tribes that are defined in the bill.

SECTION-BY-SECTION ANALYSIS

Section 1 designates the bill's short title.

Section 2(a) contains Congressional findings.

Subsection (b) defines the purposes of the legislation, which are: (1) to recognize the importance of the Sand Creek Massacre; (2) to authorize the establishment of the Sand Creek Massacre National Historic Site; and (3) to provide opportunities for tribes to be involved in the formulation of general management plans and educational programs for the site.

Section 3 provides definitions for key terms used in the legislation, including the term "tribe" which means the specific tribes connected with the Sand Creek Massacre site. The term "descendant" means a member of a tribe, an ancestor of whom was injured or killed in, or otherwise affected by, the Sand Creek Massacre.

Section 4(a) authorizes the Secretary of the Interior (Secretary) to establish the Sand Creek Massacre National Historic Site (site) when he has determined that lands containing a sufficient quantity of resources to provide for the preservation, memorialization, commemoration, and interpretation of the Sand Creek Massacre have been acquired by the National Park Service.

Subsection (b) describes that the site will consist of approximately 12,480 acres in Kiowa County, Colorado as generally depicted on the specified map reference.

Section 5(a) requires the site to be managed in accordance with the laws applicable to the National Park System.

Subsection (b) requires the Secretary to protect and preserve the site's resources, interpret and provide for public understanding of its natural and cultural resources values, and to memorialize, commemorate, and provide information to visitors to enhance cultural understanding about the site and assist in minimizing the chances of similar incidents in the future.

Subsection (c) requires the Secretary to consult with and solicit advice and recommendations from the tribes and the State in preparing the site's management plan and educational material, and authorizes the Secretary to enter into cooperative agreements.

Section 6(a) authorizes the acquisition of land or interests in land within the boundaries of the site by purchase from willing sellers, donation, or exchange. Lands owned by the State may only be acquired through donation.

Subsection (b) requires the Secretary to give priority to acquisition of the land that includes the existing Sand Creek Battleground marker.

Subsection (c) requires the Secretary to use cost-effective alternatives to fee ownership of the land where practical, including conservation easements and other means of acquisition. A support facility for the site that is not within the designated boundaries may be located in Kiowa County, Colorado, subject to an agreement between the County and the Secretary.

Section 7 requires a management plan for the site to be prepared within five years after funds are made available to carry out the legislation.

Section 8 provides descendants with reasonable rights of access and use of the site, and requires that commemorative activities of descendants be considered in park planning and operations.

Section 9(a) requires the Secretary to grant any descendant or member of a tribe reasonable access to the site for the purpose of carrying out a traditional, cultural, or historical observance. No fees may be charged for such access.

Subsection (b) authorizes the Secretary to temporarily close specific portions of the site to the general public in order to protect the privacy of the traditional, cultural, or historical observances under subsection (a). The closures must be made in a manner that affects the smallest practicable area for the minimum period necessary.

Subsection (c) requires the Secretary to dedicate a portion of the site for the repatriation of human remains and other items associated with the Sand Creek Massacre.

Subsection (d) requires the Secretary to consult with descendants and tribes in exercising any authority under this section.

Section 10 authorizes the appropriation of such sums as are necessary to carry out the legislation.

COST AND BUDGETARY CONSIDERATIONS

The following estimate of the cost of this measure has been provided by the Congressional Budget Office:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, DC, September 22, 2000.

Hon. FRANK H. MURKOWSKI,
Chairman, Committee On Energy and Natural Resources,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 2950, the Sand Creek Massacre National Historic Site Establishment Act of 2000.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Deborah Reis.

Sincerely,

BARRY B. ANDERSON
(For Dan L. Crippen, Director).

Enclosure.

S. 2950—Sand Creek Massacre National Historic Site Establishment Act of 2000

S. 2950 would authorize the Secretary of the Interior to establish the Sand Creek Massacre National Historic Site in Colorado once the National Park Service (NPS) has acquired sufficient resources at the site to provide for its preservation and interpretation. The NPS could acquire lands and other property interests within the 12,480-acre site by donation, purchase, or exchange. The bill would require the NPS to dedicate a portion of the site to the preservation of human remains, funerary objects, and other items that might be found on or returned to the site. Within five years of receiving funding for this purpose, the agency would prepare a general man-

agement plan for the site. Finally, the bill would authorize the appropriation of whatever amounts are necessary for these activities.

CBO estimates that the NPS would spend $14.5 million over the next five to seven years to implement S. 2950, including $2 million to acquire land for the new historic site, $12 million to construct visitor and administrative facilities, and $0.5 million to prepare a management plan. Once sufficient land has been acquired to establish the site, the agency would spend about $1.3 million a year to operate and maintain it, including making payments in lieu of taxes to local governments. CBO estimates that providing space within the site for human remains and tribal objects would not add significantly to start-up or annual operating costs. These estimates are based on information provided by the NPS and assume appropriation of the necessary amounts.

The bill would not affect direct spending or receipts; therefore, pay-as-you-go procedures would not apply. S. 2950 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act. State and tribal governments might incur some costs if they choose to participate in the activities authorized by this bill, but these costs would be voluntary.

The CBO staff contact for this estimate is Deborah Reis, who can be reached at 226–2860. The estimate was approved by Peter H. Fontaine, Deputy Assistant Director for Budget Analysis.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out S. 2950. The bill is not a regulatory measure in the sense of imposing Government-established standards or significant economic responsibilities on private individuals and businesses.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would result from the enactment of S. 2950, as ordered reported.

EXECUTIVE COMMUNICATIONS

On September 15, 2000, the Committee on Energy and Natural Resources requested legislative reports from the Department of the Interior and the Office of Management and Budget setting forth Executive agency recommendations of S. 2950. These reports had not been received at the time the report on S. 2950 was filed. When the reports become available, the Chairman will request that they be printed in the Congressional Record for the advice of the Senate. The testimony provided by the national park Service at the Subcommittee hearing follows:

STATEMENT OF DONALD J. HELLMANN, DEPUTY ASSISTANT DIRECTOR, LEGISLATIVE AND CONGRESSIONAL AFFAIRS, NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR

Mr. Chairman and members of the subcommittee, thank you for the opportunity to appear before you to present the position of the Department of the Interior on S. 2950, a bill

to establish the Sand Creek Massacre National Historic Site as a unit of the National Park System.

The Department strongly supports protection of this site through S. 2950 with the amendments outlined in this testimony. We appreciate the continued interest and support of Senator Campbell, and look forward to working with him and the subcommittee to protect this site.

Since the day it happened, the Sand Creek Massacre has been regarded as one of the most emotionally charged and controversial events in American history. On November 29, 1864, Col. John M. Chivington, leading about 700 soldiers of the First and Third Colorado Volunteers, attacked a village of about 500 Cheyenne and Arapaho people. These people were under the overall leadership of Black Kettle, and had camped on Sand Creek at the direction of Major Scott Anthony, who commanded Fort Lyon, about 40 miles to the south. By day's end, the soldiers had killed at least 150 people, including women and children.

The massacre resulted in almost instant controversy, which ultimately led to three federal investigations, all of which condemned Chivington's actions. By the 1865 Treaty of Little Arkansas with the Cheyenne and Arapaho, victims of Sand Creek received minor compensation for their suffering and loss of property. While some efforts were made to understand the massacre, place blame on the responsible parties, and compensate the tribes, little was actually done.

Many people, including Gen. William Tecumseh Sherman, visited the site and collected artifacts of all kinds. The land was used for large-scale cattle operations, and eventually small private landowners farmed and grazed the property. As time passed, evidence of the massacre slowly disappeared. Although the event continued to be remembered, mostly by the tribes and historians, the only commemoration of the massacre was a simple granite marker placed near the site by the local community in 1950.

In 1998, P.L. 105–243 authorized the Secretary to identify the location and extent of the Sand Creek Massacre, determine the suitability and feasibility of designating the site as a unit of the National Park System, and present those findings in 18 months.

Starting in 1998 a variety of techniques and methods were used to locate the site of the Sand Creek Massacre. These included a thorough research of written records, archeology, geomorphology, aerial photographic analysis, traditional tribal methods and recording the oral traditions of the Cheyenne and Arapaho Tribes of Oklahoma, the Northern Cheyenne and the Northern Arapaho.

Once the location of the site was identified, the next task was to determine national significance and suitability and feasibility of the site as a unit of the system. To be eligible for consideration, National Park Service Management Policies state that an area must possess nationally significant natural, cultural or recreational resources; be a suitable

and feasible addition to the system; and require direct NPS management instead of protection by some other governmental agency or private sector. The Special Resource Study for the Sand Creek Massacre site, completed in July 2000, concluded that the area is nationally significant.

The Sand Creek Massacre site possesses exceptional value in illustrating and interpreting the history of U.S.-Indian relations in the American West. The massacre at Sand Creek of nearly 150 Cheyenne and Arapaho people who believed they were under the protection of the U.S. Government was a major turning point in the relationship between whites and Indians. Virtually all Indian and army conflicts that ensued were rooted, at least partly, in the massacre.

A National Park System unit at Sand Creek would provide an opportunity for Americans to better understand the significance of the massacre, the chain of events that led to it, the relationship between Indians and whites during the mid-to late-19th Century, the devastating effects of the massacre upon the Cheyenne and Arapaho peoples, and its far reaching repercussions, many of which linger today. The site also retains a high degree of physical integrity, and its isolated setting will give visitors an opportunity to contemplate the complexities of the human tragedy that unfolded there.

The Special Resource Study also concluded that Sand Creek is both suitable and feasible as a unit of the National Park System. The site is suitable because it represents a cultural theme that is not already adequately represented in the system. As described on the map referenced in S. 2950, the proposed national historic site is also a feasible addition in that the area taken as a whole is of sufficient size and configuration to ensure long-term resource protection and accommodate public use. As outlined in the Special Resources Study, acquisition of up to 12,480 acres of land and development of the site will cost approximately $13,600,000. The preliminary annual cost of administering the site is approximately $1,260,000.

S. 2950 would authorize the establishment of Sand Creek National Historic Site. The unit would be established once the Secretary of the Interior determines that sufficient lands have been acquired to provide for the protection and commemoration of the Sand Creek Massacre. Lands are identified on a map date July 1, 2000 and would be acquired through donation, purchase from willing sellers or exchange. Priority for acquisition is given to the site containing the historical marker. Keys to managing the site would be protection of the natural and cultural features that are critical to telling the story of Sand Creek; and cooperation and consultation with the tribes in the development of management plans and educational programs.

S. 2950 calls for the Secretary to consider locating support facilities in Kiowa County. The legislation also contains important provisions that would provide for special

needs of the descendants and other members of the identified tribes to access and use federally acquired land for the purpose of traditional, cultural and historical observances, and consultation with respect to commemorative activities. S. 2950 also calls for the dedication of a portion of the site for the purposes of repatriation of human remains.

One of the major strengths of this project has been the extensive consultation and inclusion of the interested individuals and organizations, especially tribes, landowners, the State of Colorado and Kiowa County. A critical result of this effort was the agreement that protection of the site is essential. It is essential in part so that we may all learn how to deepen our understanding of other cultures.

We believe some minor amendments are needed in Sections 8 and 9 that would clarify the intent of the legislation. These sections address the special needs of the descendents and tribal members of those affected by the Sand Creek Massacre. We believe that the two sections should be made consistent with recent Congressional direction regarding reasonable accommodation of the religious and cultural needs of American Indians in units of the National Park System. We would be pleased to provide draft language to that effect.

We also recommended deleting on page 12, line 21, "located in the vicinity of the site", as there are no tribes located in the vicinity of the site.

We look forward to working with the subcommittee and Senator Campbell to ensure that the final bill language protects this important site and the story it has to tell.

That concludes my remarks. I would be happy to answer any questions you may have.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee notes that no changes in existing law are made by the bill S. 2950, as ordered reported.

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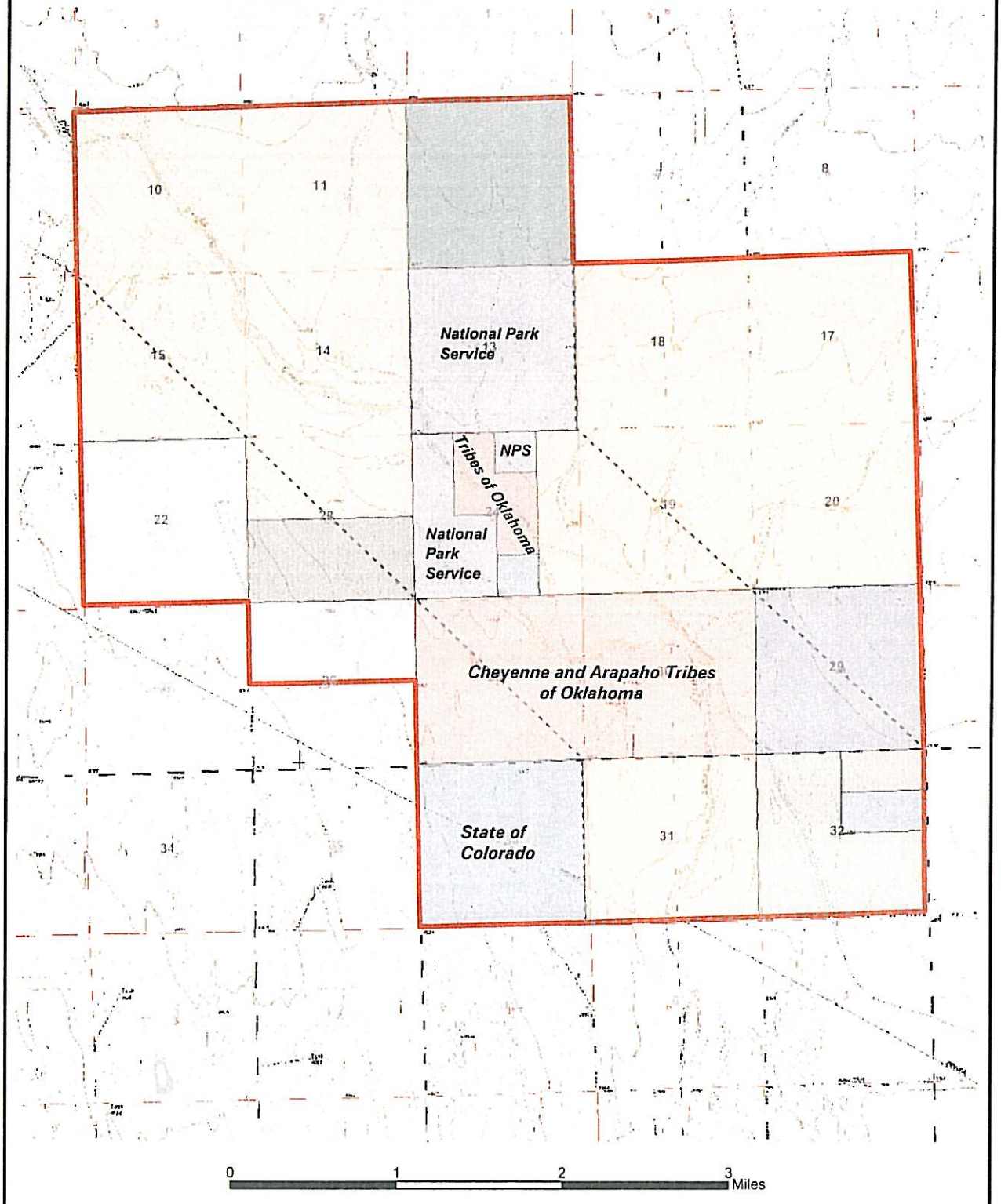
Sand Creek Massacre National Historic Site
Colorado

National Park Service
U.S. Department of the Interior

Land Status



Produced by Intermountain Region GIS Program Office

August 2003

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CHAPTER 6

THE SAND CREEK MASSACRE STUDY AREA

This place was well known to all the Cheyennes and Arapahos and they used it as a camping ground for many years. There were several chiefs in our camp, and instead of being all camped together in one large village, each band was camped by itself with its lodges grouped together and separated by a little open space from the camps of the other bands.

George Bent, as quoted in the *Life of George Bent: Written From His Letters*

Just rising the brow of a little eminence, we commanded a view of the gently sloping country, for a distance seemingly of about five miles, at the termination of which ran a large stream, with a channel a fourth of a mile wide, but filled with nought but sand and driftwood, in clumps. Here upon the banks the white tepas [sic] of an Indian village appeared as little dots upon the great mass of brown before us.

George A. Wells, November 28, 1864

General Site Description

The Sand Creek Massacre site lies along an approximate 5 ½-mile stretch of Sand Creek in Kiowa County, Colorado. Located in rural southeastern Colorado, the site is in gently rolling prairie grassland now used as agricultural ranch and farmland. The topography is generally flat, and viewsheds extend for several miles, particularly to

Land Ownership Map: Under Alternative 1, no action would be taken at the Sand Creek Massacre site, and all the land would remain in private ownership.

SS Ranch pasture was under fence, and the Sand Creek Massacre site marked the western boundary of the "north pasture." The fences were taken down by 1885, at which point homesteaders began moving onto the pastures once controlled by the cattle ranches.[21] Among the remnants of the open range cattle industry within the massacre site boundary is the extant foundation of a line shack associated with the SS Ranch in the north half of Section 30, Township 17 South, Range 45 West.

The first Euro-American homesteaders were relatively late in legally claiming land in the Sand Creek Massacre area. The Sand Creek Massacre area was first surveyed by the government in 1879-80; the earliest land claims within the study area occurred in the late 1880s, almost 25 years after the massacre. Settlement was apparently difficult, since numerous claims were subsequently abandoned. Several land laws were used to claim land, including the Homestead Act, the Desert Land Law, and the Timber Culture Act. The Union Pacific Railroad received the odd-numbered sections in the area, patented in 1904.

Only one town was established within the Sand Creek Massacre study area. Upper Water Valley, also known as New Chicago, was established in the vicinity of the southeast quarter of Section 14, Township 17 South, Range 46 West.[22] The town apparently lasted only one summer, "having died with the frost of 1887." During this time, the Missouri Pacific Railroad was conducting surveys for a railroad line, including a route through the vicinity of what would become the Upper Water Valley townsite. The town quickly died, however, when the railroad line was established to the south, near what is now the town of Chivington, Colorado.[23]

Also within the Sand Creek Massacre site are the remains of the Chivington Canal. The headgates of the abandoned canal, which was designed to divert water from Sand Creek into Chivington Reservoir No. 4 south of the town of the Brandon, are in the southeast 1/4 of Section 24, Range 46 West, Township 17 South. The canal was one of a number of canals constructed by the Chivington Canal Company, ca. 1910-12. However, the canal was abandoned sometime after 1918, although approximately $200,000 had been spent on its construction. The canal apparently never carried enough water to be profitable, but has left a mark upon the landscape that is clearly visible in aerial photographs of the area.

Throughout the twentieth century, the Sand Creek Massacre site has been used for farming and stockraising. Thirteen landowners have property within the boundary of the Sand Creek Massacre site, and all of the land is used for agricultural purposes. Within the boundary of the massacre site are two building complexes. A ranch house and associated outbuildings are located in Section 30, Township 17 South, Range 45

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[21]Miguel Antonio Otero, *My Life on the Frontier, 1864-1882* (New York: The Press of the Pioneers, 1935), p. 47; and Ava Betz, *A Prowers County History* (Lamar, CO: Big Timbers Museum, 1986), p. 282. This historical information is summarized in Interim Report No. 2, Christine Whitacre and Lysa Wegman-French.

[22]Land Records, Kiowa County Abstract Company. Land records for adjoining sections have not been researched; the town site may have extended into either Section 13 or 23.

[23]"Kiowa County and Its Towns: A Short Story of Their Ups and Downs," *Kiowa County Press*, January 26, 1917.

northeastern Oklahoma north-northwesterly through Montana.[24] The study site has gently rolling topography with elevations of approximately 3,960 feet above sea level (asl) along the creek, and elevations of bluffs to the west more than 4,000 feet asl and rising slopes to the east at more than 4,050 feet asl. The Sand Creek floodplain is terraced, but mostly level to gently sloping and varying from one-quarter to one-half mile in width through the site.[25]

Kiowa County experiences weather typical of the eastern plains of Colorado with an average precipitation of 13-14 inches annually. Moisture is spread throughout the year but is characterized by pulses of moisture in scattered but large rainfall and hail events from summer thunderstorms and periodic medium to heavy snowfalls (average 27 inches annually) during the winter. Average winter temperature is 32^0F (0 degrees Celsius), while summer temperatures average 74^0 F. The dominant weather is mostly dry and clear throughout the year with substantial numbers of days with moderate winds. Prevailing winds come from the south-southeast, while high velocity and storm winds predominantly come out of the north and northwest. Average wind speed is highest in April, at 10 miles per hour.[26]

Water Quantity

Sand Creek, also referred to as Big Sandy Creek (and shown on state of Colorado and U.S. Geological Survey maps by that name) is an intermittently flowing stream through the site. The creek's watershed stretches more than 120 miles from El Paso County, Colorado, through Limon and Kit Carson before reaching the study site, and continues more than 30 miles more to join the Arkansas River eight miles east of Lamar. While it drains over 3,400 square miles of southeastern Colorado to the Arkansas River, most of the flow through the study site derives from infrequent large rainfall events during the spring and summer. Thus, during normal and dry years, the creek does not substantially flow at the site, and has not been reliably used for potable or irrigation use. Recent observations of the creek and associated plant communities suggests that the only water normally found on the site is in creek-scoured depressions that intercept groundwater, several minor seeps, and one major spring on the east side of the creek floodplain. The spring is in Section 20, with water flowing through Section 30, Township 17 South, Range 45 West.

The bed of Sand Creek is lightly defined throughout much of its floodplain both upstream and downstream of the site. During moderate to large flows of the creek, clearly marked edges and bank conditions develop through erosion and debris deposition, and numerous braided channels and shallow flow areas are evident among the cottonwood groves.

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[24]Robert G. Bailey, *Ecoregions of the United States* (U.S. Department of Agriculture: Forest Service, 1994).

[25]Amy Holmes and Michael McFaul, *Geoarchaeological Assessment of the Sand Creek Massacre Site, Kiowa County, Colorado*, October 1999.

[26]David L. Anderson, John G. Lesh, and Donald W. Wickman, *Soil Survey of Kiowa County, Colorado* (U.S. Department of Agriculture: Soil Conservation Service, in cooperation with Colorado Agricultural Experimental Station, 1981).

Streamflow diversion has occurred for a number of years earlier in the twentieth century in Section 24, Township 17 South, Range 46 West, for the Chivington irrigation canal. The Chivington Irrigation Company built and operated this short lived and now defunct creek diversion and canal that fed Chivington Reservoir No. 4, also known as Brandon Lake, for agricultural irrigation purposes just prior to World War I.[28] All of the diversion structures and most of the earthen canal system remain in a poor and unworkable condition. The canal construction and operation, compounded with extensive grazing, some crop tilling farming, and erosion have altered flow characteristics and embankments surrounding the largest spring entering the creek at the east end of the Dawson South Bend.

The intermittent flow and periodic flooding character of Sand Creek appear significant to the maintenance of the general physical stream morphology, plant species habitat, and the visual appearance of the floodplain through the study site. Over a long period of time, intermittent flow and periodic flooding selects for largely dry prairie plant species through the riparian area. More mesic and wetland species, such as rushes and sedges are limited to the wettest of areas in or surrounding surface or shallow groundwater. Cottonwoods are only successful where established during specific scouring and flooding conditions, nurtured by available surface or groundwater, and minimally disturbed by grazing pressures. Wildlife grazing by Bison, and fuelwood

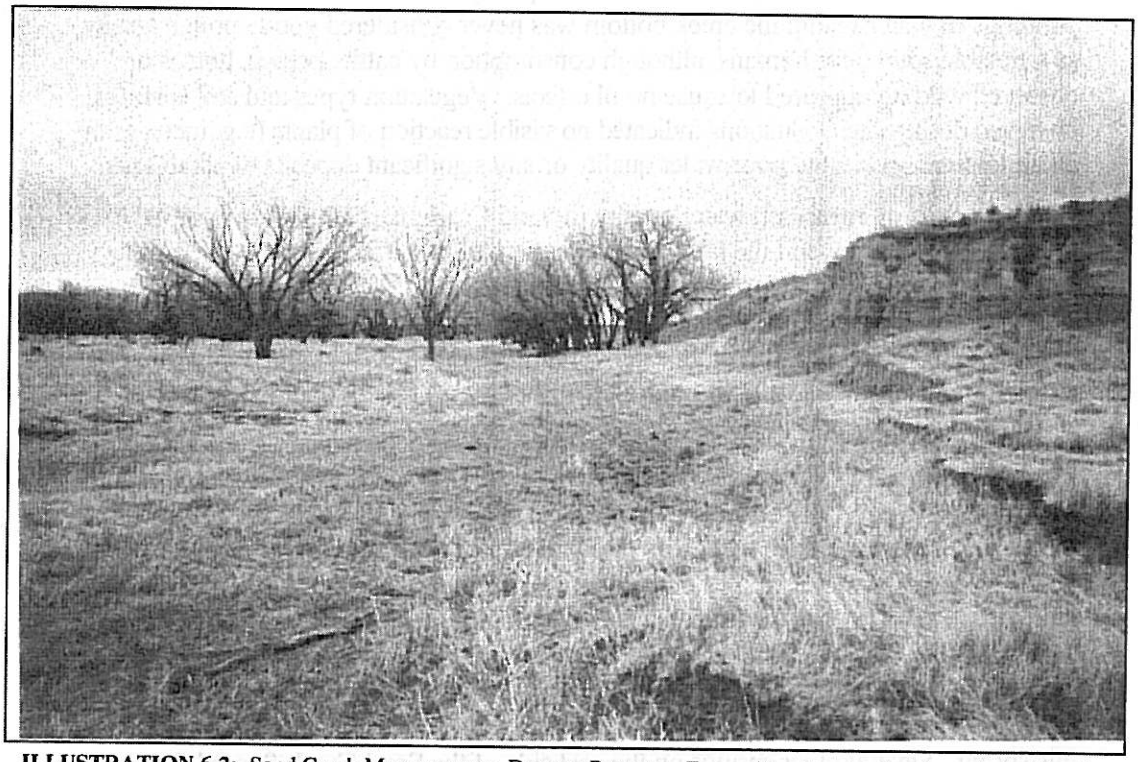

ILLUSTRATION 6-2: Sand Creek Massacre area, Dawson Property. Even without water, the streambed of Sand Creek – an intermittent stream – is clearly defined on portions of the study area. *John Reber*

[28] Roleta D. Teal and Betty Lee K , *Kiowa County* (Johnson Publishing Co., 1976), p. 82.

mentioned previously, supply water of unknown quality for at least one stock watering use. Each of these springs may have been used historically by American Indians, even though the source or discharges may have changed some since 1864.

Groundwater quality in the area of the creek has generally been rated as fair to poor. In a 1967 report on the local groundwater resources, 37 of 41 wells had sulfate contents greater than the 250 ppm limit recommended by the U.S. Public Health Service and all of the wells contained more than the recommended 500 ppm dissolved solids limit. One local well had an elevated selenium content, 0.11 ppm, and it was recommended that all wells be carefully checked for elevated levels of that potentially toxic element.[30] It is possible that the shallow spring sources of water along the eastern side of the creek floodplain could be of similar, better, or worse quality than the wells tested.

Current land uses on the site are not significantly affecting water quality in the creek. Groundwater locally and beneath the site is considered hard (and high in sulfate and dissolved solids), but is used for domestic and stock purposes. No current threat to surface or groundwater is apparent, although intensive livestock raising operations could present a threat to both if inadequately sited or operated. The perennial spring(s) along the east side of the creek floodplain are believed to have been one of the critical reasons for historic encampments made on the site by numerous Indian tribes. While the spring on Sections 20 and 30 appears to tap shallow groundwater draining from the northeast, it apparently sustains its flow even during dry periods through its connection to a large watershed and aquifer. The location of the source, flow discharge, and riparian habitat of the spring has changed somewhat through the construction and operation of the Chivington Canal, some local farming, extensive grazing, and local erosion.

Water Rights

Few water rights have been established for the surface water of Sand Creek. The Water Rights Report maintained by the State Engineer's Office shows that seven of the ten water rights held are considerably upstream of the study site, near the headwaters west of Limon, Colorado. These rights are for reservoir storage of precipitation events and minor spring inflows more than 70 miles from the site, and thus are believed unlikely to be affecting the study site to any significant degree. Three additional water rights exist for irrigation wells 18-25 miles downstream on Sand Creek.

Within an approximate six-mile radius of the study site, there are nearly 100 wells known as "exempt wells," not subject to water rights augmentation plans, and recorded by the Colorado State Engineer. The great majority of these wells have small yields, suggesting domestic use. The majority of these wells are upstream of the study site. Several are larger irrigation wells yielding 350-1300 gallons per minute, but

[30]Donald L. Coffin, *Geology and Ground-Water Resources of the Big Sandy Creek Valley Lincoln, Cheyenne, and Kiowa Counties, Colorado*, Geological Survey Water-Supply Paper 1843 (U.S. Department of the Interior: U.S. Geological Survey, 1967).

Geology/Soils

Sand Creek drains the eastern side of a broad southeasterly trending valley composed largely of Quaternary eolian sands. These sands from the Holocene and Pleistocene periods overlay complex and discontinuous Pleistocene sands, silts, and gravels from 0 to 70 feet in depth to the Smoky Hill Shale (part of the Niobrara Formation).[35] Dune sands make up the bluffs along and extending back from the western side of the creek, while coarser (and including more silt) valley fill and slopewash materials blanket the terraces and slopes extending eastward. Along Sand Creek, just south of the Dawson South Bend, dune and valley fill deposits average 20 to 50 feet in depth above the chalky Smoky Hill Shale.[36]

Along and directly adjacent to the massacre site and Sand Creek, distinct alluvial terraces have developed as secondarily worked deposits of Pliocene and lower Pleistocene materials that originated from the mountains to the west. Numerous climatic extremes of wet, dry, and wind periods over thousands of years have then modified surficial conditions to allow the development of most of the alluvial and eolian soils seen on the site today.

Soils along Sand Creek within the floodplain are nearly level and somewhat poorly drained to poorly drained Fluvaquents. Highly variable soil textures have developed over years by stream flooding and wind caused erosion and depositions, mixing alluvial and eolian materials. Soils bordering the creek's eastern floodplain are deep and mostly well drained, ranging from calcareous material derived Kim-Harvey-Stoneham (KHS) loams to the loess derived Wiley loam. The KHS loams lie at 1-12 percent slopes and where strongly calcareous, adversely affect some plant growth. Along the western side of the creek and rising in hills and bluffs bordering the floodplain are the Valent and Bijou-Valent loamy sands, both formed from non-calcareous eolian sands and are deep and somewhat excessively to excessively drained soils. The Valent loamy sands at 3-10 percent slopes are deep and excessively drained

Most all of the KHS loams, Wiley loams, Valent loamy sand, Sundance loamy sand, Bijou-Valent loamy sands, and the Colby silt loam are highly susceptible to erosion by the wind. Intensive management is required for preventing wind loss of the soils through maintaining a cover of plants or stubble at all times, maintaining a cloddy surface, and using minimum tillage, terracing, and stripcropping. Because of the relatively high surface permeability of most of these soils, surface runoff caused erosion is a low hazard on this site when compared to wind erosion.

During the 1970s, numerous unvegetated and open sandy spots, and severely wind-eroded spots were indicated on both sides of Sand Creek in central portions of the massacre site by soil scientists. These spots were observed in the Sundance and the Valent loamy sands west of the creek and the Colby silt loam and Wiley loam east of

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[35]Joseph A. Sharps, "U. S. Geologic Map of the Lamar Quadrangle, Colorado and Kansas," 1:250,000, Map I-944 (U.S. Department of the Interior: U.S. Geological Survey, 1976).

[36]Coffin.

Gas produced in the area has an unusually high percentage of Helium gas (as high as 3 % compared to most other gas holding less than 1.5%). Helium is being produced and marketed from a refinery northeast of the site in Cheyenne Wells.

Most of the drilling near the site has not encountered oil or gas. Some additional drilling for gas may occur near the site, but discoveries to date would not indicate high hydrocarbon potential. There are no known mineral extraction operations in the vicinity of the site other than several oil/gas wells. Subsurface mineral rights in the study area are currently held by individual landowners. The current and future owners/lessees of the subsurface mineral rights may develop these rights on the site.

Utility Rights-of-Way

The individual properties within the site have a variety of easements and rights-of-way for electrical power and telephone service. Only one major underground natural gas pipeline crosses the site (on Bill and Tootie Dawson's land) in a southwest-northeast heading. Provisions for normal access for periodic monitoring, repairs, and certain future improvements would accompany such a right-of-way.

Vegetation

The primary grass found in the area is blue gramma grass and buffalo grass, accompanied by some switchgrass and side-oats gramma. Western wheatgrass is also found in the lower, more moist swales. Where grazing has been excessive and on drier slopes, sand sage has gained a foothold. Trees on the site are eastern cottonwood, found in even-aged groves close to current or historic seasonal stream traces of Sand Creek

In the area surrounding the site, there is little active farming by cultivation. Land placed under cultivation primarily east and north of the site has been regularly in milo, sorgham and millet, and is normally too dry for wheat. The dry and sandy nature of the land has been found to be most suitable to grazing, although several sections (Sections 12 and 13 Range 46, Township 17 South) of land in and bordering the study site have been placed into the USDA Conservation Reserve Program (CRP). The CRP is a federal program administered by the Natural Resources Conservation Service and was developed as part of the 1996 Farm Bill to preserve lands that had been tilled and could be preserved for plant or wildlife habitat through planting and protection from grazing or future farming.[39]

Non-indigenous (non-native) plants are found in Kiowa County and throughout southeastern Colorado, but are not a large problem currently along Sand Creek and the study area. Cheat grass and the sand burr or goatshead are probably some of the more common nuisance species on the site, but Canada thistle is troublesome east of the site, and leafy spurge is prevalent in Lincoln County to the northwest.[40] Changes in

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[39]L. Dean Luokonen, USDA National Resource Conservation Service, District Conservationist, Kiowa County, personal communication with John Reber, National Park Service, Physical Scientist, December 1999-March 2000.

[40]Luokenon communication.

Table 3: Federally Listed Species and their Status in Kiowa County[42]

SPECIES	STATUS
Bald eagle, *Haliaeetus leucocepalus*	Listed Threatened
Least tern, *Sterna antillarum*	Listed Endangered
Piping plover, *Charadrius melodus*	Listed Threatened
Eskimo curlew, *Numenius borealus*	Listed Endangered
Mountain plover, *Charadrius montanus*	Proposed Threatened
Lesser prairie chicken, *Tympanuchus pallidicinctus*	Candidate for listing
Black-footed ferret, *Mustela nigripes*	Listed Endangered
Swift fox, *Vulpes velox*	Candidate for listing
Black-tailed prairie dog, *Cynomys ludovicianus*	Candidate for listing
Arkansas darter, *Etheostoma cragini*	Candidate for listing

Hazardous Materials

There is no known contamination of soil or water onsite that would meet current state or federal requirements for a clean up, nor has any contamination been observed through several archeological surveys onsite. The current agricultural uses of the site would not normally cause contamination onsite, but a survey would be required for such before any land purchases are made.

Air Quality

The study site and the entire Kiowa County area have generally excellent air quality and meet the "attainment" status for all required air pollutants monitored in the National Ambient Air Quality Standards. The area is a Class II airshed; a Class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter, as specified in the 1963 Clean Air Act (42 U.S.C. 7401 *et seq.*). The Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

Environmental Justice

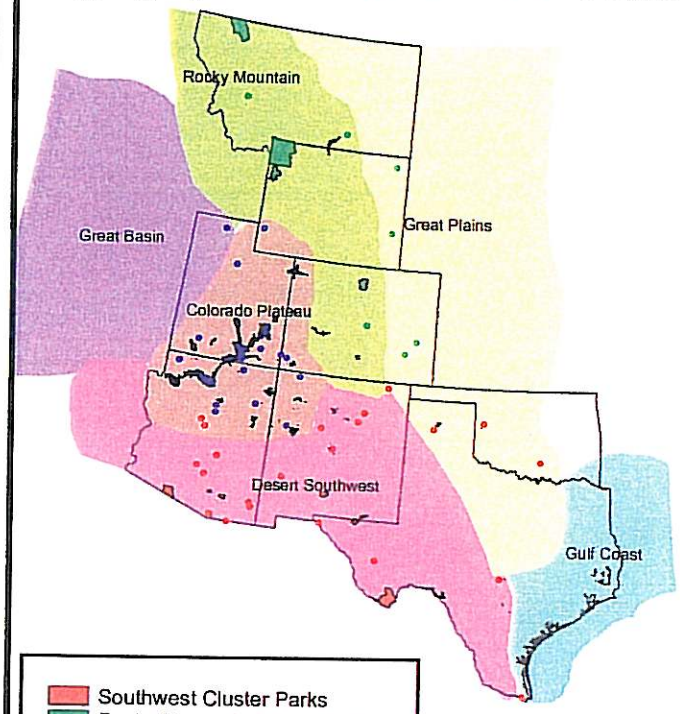
Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (February 11, 1994), requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and

[42] *Federally Listed Species and their Status* (U.S. Department of the Interior, Fish and Wildlife Service, 2000).

Intermountain Region

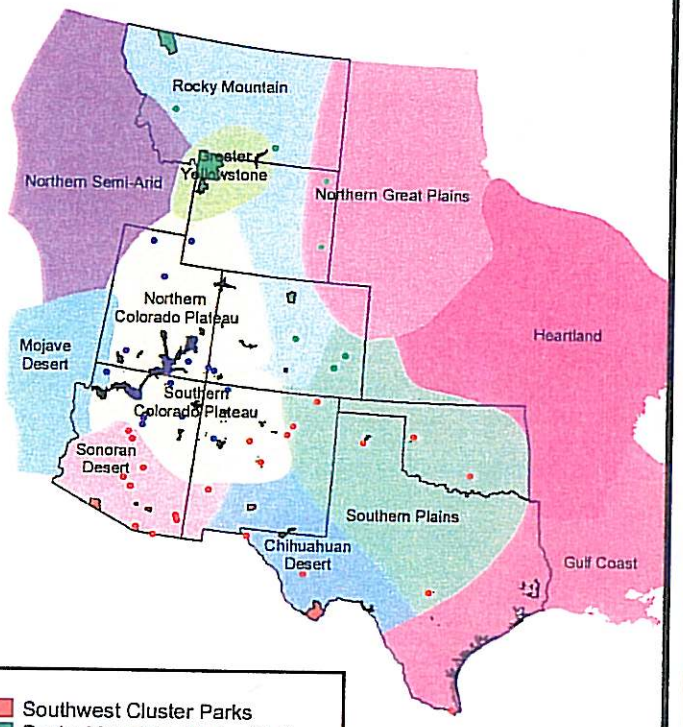
National Park Service
U.S. Department of the Interior

Cooperative Ecosystem Studies Unit Biogeographic Areas and Cluster Boundaries



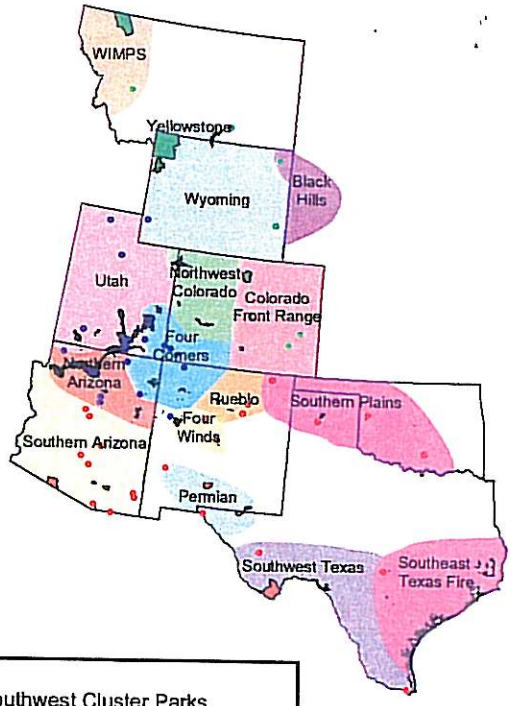
Southwest Cluster Parks
Rocky Mountain Cluster Parks
Colorado Plateau Cluster Parks

Inventory & Monitoring Network Boundaries



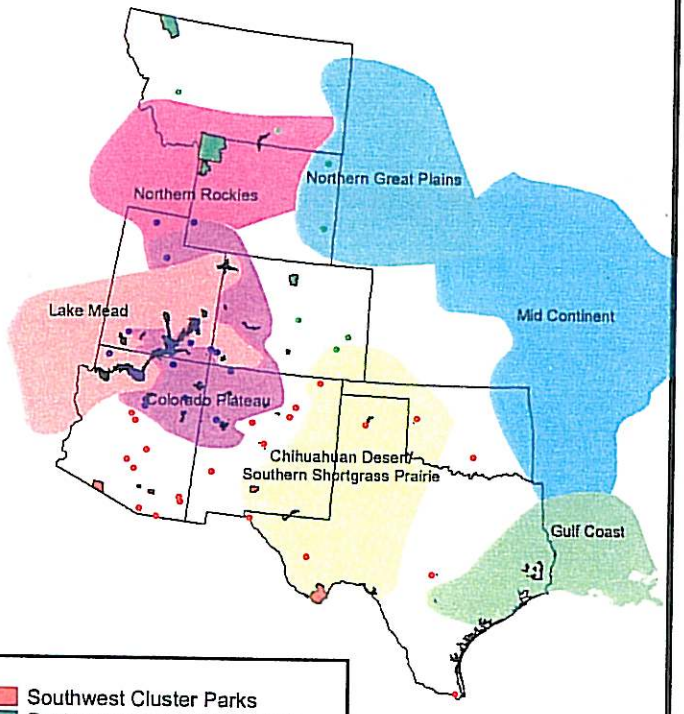
Southwest Cluster Parks
Rocky Mountain Cluster Parks
Colorado Plateau Cluster Parks

Fire Program Clusters



Southwest Cluster Parks
Rocky Mountain Cluster Parks
Colorado Plateau Cluster Parks

Exotic Plant Management Team Boundaries



Southwest Cluster Parks
Rocky Mountain Cluster Parks
Colorado Plateau Cluster Parks

Produced by the Intermountain GIS Office Denver, Colorado

August 2002

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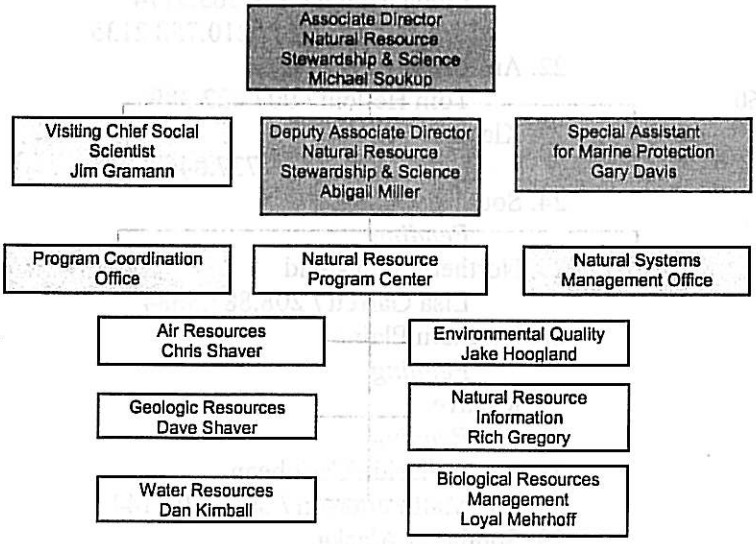
Introduction to the NPS Inventory and Monitoring Program

National Park Service
U.S. Department of the Interior

Background. Efforts to establish a Service-wide inventory and monitoring program date to the 1980's. In 1990, the first program defined a basic set of natural resource inventories for all parks with significant natural resources, established a prototype monitoring program, and provided funding. The prototype monitoring program included 11 biogeographical regions involving 22 parks, intended to test monitoring strategies. In 1994, responsibility and funding for the monitoring design program and the vegetation mapping portions of the inventory program were transferred to what is now the Biological Resources Division of the USGS. Beginning in FY 2000, the Natural Resource Challenge provided increased funding to accelerate the prescribed inventories, including funding for regional coordinators to guide biotic inventories and a new approach to monitoring. The new approach, referred to as Park Vital Signs Monitoring, is based on less comprehensive and more extensive monitoring than conducted by the prototypes. Selected resources are monitored over time, in a network of parks with similar habitats to assist in understanding any changing conditions in parks.

Service-wide Program. The Service-wide Inventory and Monitoring Program is part of the Natural Resource Information Division (NRID). Five other divisions and NRID comprise the Natural Resource Program Center (NRPC), under the Associate Director, Natural Resource Stewardship and Science (NRSS). With one exception, all are headquartered in Denver or Ft. Collins, Colorado. Staff from the Colorado-based divisions assists in carrying out the Service-wide Inventory and Monitoring Program by providing expertise and assistance in acquiring inventories and in planning monitoring. The Water Resources Division provides separate funding for water quality monitoring planned and conducted on a network basis, in conjunction with Park Vital Signs Monitoring. The Air Resources Division funds and administers a nationwide air quality network established beginning in 1979 that is integrated with EPA and state monitoring networks. The Service-wide Inventory and Monitoring Program receives strategic direction from the Inventory and Monitoring Advisory Council (IMAC), appointed by the Associate Director, NRSS, from regional nominations.



Performance Management. The Inventory and Monitoring Program is an important component of the Service's performance management program under the Government Performance and Results Act. The Service's strategic plan includes goals to complete inventories and implement monitoring, as well as goals related to the condition of resources. As new monitoring programs are implemented, our ability to provide scientifically credible measurements of resource conditions will improve. Many of the NRPC staff who assist with monitoring are also performance management goal coordinators.

For other information about the I&M program see http://www1.nature.nps.gov/im/index.html. For Directory of all NRSS officials/staff, see http://www1.nrintra.nps.gov/directory/

National Park Service
U.S. Department of the Interior
Natural Resource Program Center

Resource Inventories

Discovering America's Natural Heritage

An NPS resource manager and U.S. Geological Survey scientist at Prince William Forest Park identify amphibian larvae as part of an extensive survey of park amphibians.

"We will lose the wildness, the very nature of our parks, if we don't understand them. If we don't truly understand them, we won't be able to speak authoritatively for them, and we won't know how to restore them."

—Michael Soukup, Associate Director, Natural Resource Stewardship and Science

Preserving the unimpaired splendor of the national parks for the enjoyment of future generations is the fundamental purpose of the National Park Service. This mission includes protecting the clear, star-filled skies over places like the Grand Canyon and ensuring that creatures like the grizzly bear and black-footed ferret grace our lands in perpetuity.

The safekeeping of the awe-inspiring natural wonders in our national parks requires the identification of their key components, including living things, natural processes, and landscape features. Natural resource inventories allow managers to account for park resources, such as the presence and distribution of plants, animals, and nonliving resources such as water, landforms, and climate in the parks. This type of baseline information is needed to make scientifically sound management decisions that ensure the future health of the parks.

The National Park Service is undergoing a comprehensive inventory effort under the Natural Resource Challenge program. The goal is to help every park with significant natural resources complete basic inventories, documenting such things as soils, vegetation, biological diversity, geologic resources, and water quality.

In order to reach this ambitious goal, the National Park Service has organized parks into 32 networks. Individual networks will link parks that share similar geographic and natural resource characteristics to facilitate collaboration, information sharing, and cost savings. Each network will develop systematic approaches for inventorying the plants and animals found in its parks.

To ensure that inventories result in the highest-quality scientific information possible, the National Park Service is working with scientists from other agencies with expertise in specialized areas. Additionally, inventory efforts are being closely coordinated to ensure that they satisfy the following important criteria.

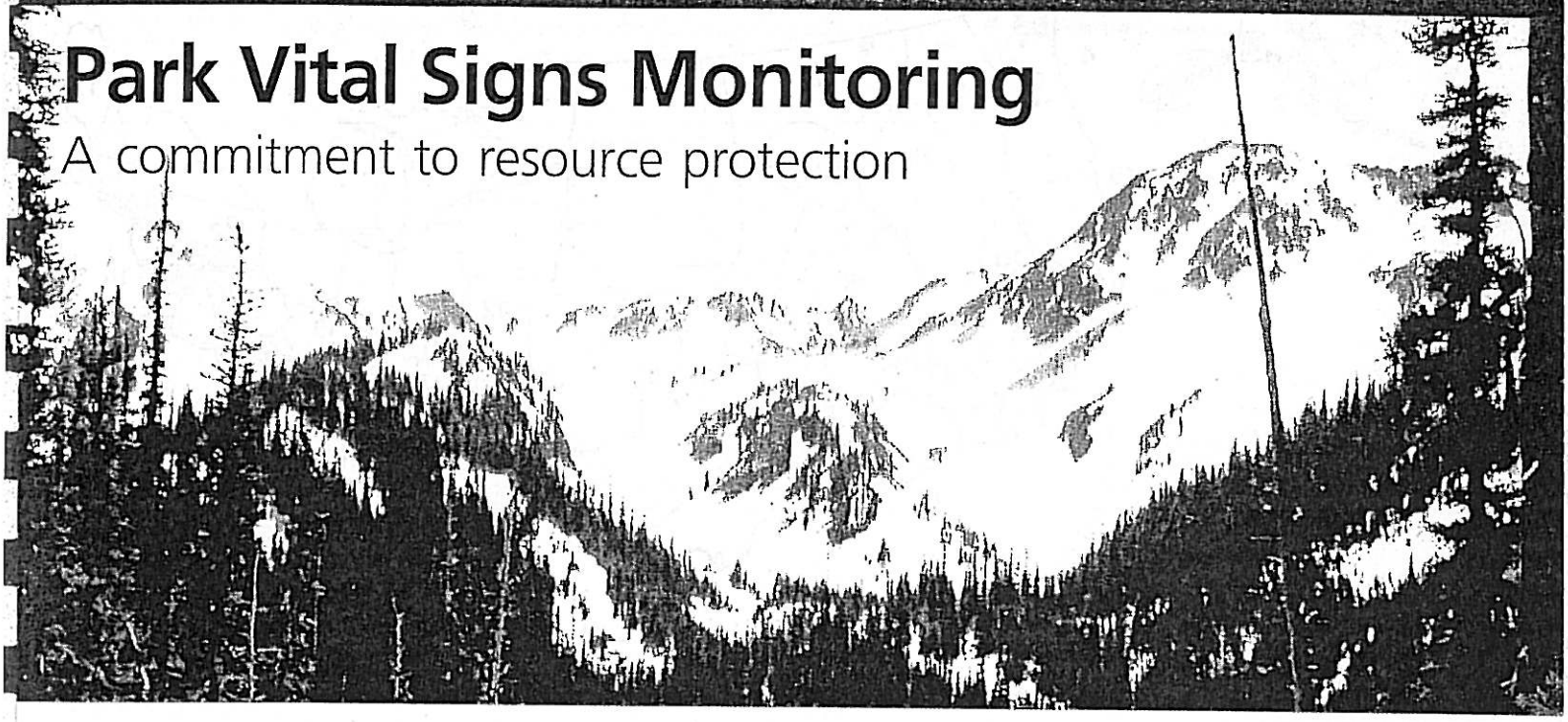
- Inventories produce the "core" or baseline information that park

National Park Service
U.S. Department of the Interior

Natural Resource Program Center

Park Vital Signs Monitoring

A commitment to resource protection



As part of their Park Vital Signs Monitoring program, staff at Olympic National Park, Washington, are measuring concentrations of air pollutants in precipitation and monitoring their effects on water quality and other indicators of ecosystem health.

"Preserving our natural resources far into the future now requires active and informed management based on sound science."

—Robert Stanton,
15th Director of the National Park Service

National parks are places of spectacular beauty, encompassing an enormous diversity of landscapes and living things. Imagine a range of natural communities that includes tundra where wolves chase caribou, desert lands forested with majestic saguaro cacti, and seashores where loggerhead turtles come to lay their eggs.

Unfortunately, beauty is not a sufficient indication of the condition and health of national parks. Just like a physician monitors a patient's heartbeat and blood pressure for diagnostic purposes, National Park Service managers need accurate information about the resources in their care. They need to know how and why natural systems change over time, and what amount of change is normal, in order to make sound management decisions. Therefore, the National Park Service has begun natural resource monitoring throughout the National Park System to gather this information as part of the Natural Resource Challenge program.

A key component of this effort, known as Park Vital Signs Monitoring, is the organization of approximately 270 park units into 32 monitoring networks to conduct long-term monitoring for key indicators of change, or "vital signs." Vital signs are measurable, early warning signals that indicate changes that could impair the long-term health of natural systems. Early detection of potential problems allows park managers to take steps to restore ecological health of park resources before serious damage can happen.

To facilitate collaboration, information sharing, and cost savings, individual networks link parks that share similar geographic and natural resource characteristics. Each network is tasked with designing a single, integrated program to monitor both physical and biological resources, such as air quality, water quality, soils, exotic species, and threatened and endangered species. The list of environmental vital signs selected for monitoring the health of these resources is expected to vary among networks, reflecting the needs and natural resources of the parks. The National Park Service is developing guidelines, reference materials, and information management tools to help networks develop monitoring programs.

To ensure quality and accountability, a board of directors guides each monitoring network, making decisions about the development and implementation of its monitoring program. Board members include park superintendents, the regional inventory and monitoring coordinator, and the network monitoring coordinator. By 2005, the National Park Service plans to have initiated monitoring programs for all 32 networks.

Park Vital Signs Monitoring is a cornerstone of effective park management, providing managers with the scientifically sound information needed to safeguard the health and integrity of landscapes and living things that make up our national parks.

National Park Service
U.S. Department of the Interior

Natural Resource Program Center

Exotic Plant Management Teams

Safeguarding native plants and animals

Exotic Plant Management Teams have been established through the Natural Resource Challenge to control exotic plants in the national parks.

"The presence of nonnative plants, animals, and other [pest] organisms pose a major and nearly universal threat to the preservation and restoration of natural habitats. Identifying, mapping, and evaluating nonnative species is critical to an effective and well-targeted effort to control their negative effects. The National Park Service must aggressively target these invaders where they threaten park resources."

Fran Mainella,
Director of the National Park Service

National parks are home to complex native communities of plants and animals that have developed over millions of years. The delicate natural balance within these communities is threatened by the invasion of exotic plants (species introduced into a natural community that are not native to that place). These exotic plants are able to reproduce rapidly, because the animals and diseases that kept them in check in their home ranges are missing. Melaleuca trees from Australia threaten to replace the wet prairies of the Everglades and leafy spurge, an import from Eurasia, easily supplants the grasslands of the northern Great Plains. When the populations of native plants are reduced, the animals that depend upon them lack the food and shelter needed for survival. Today, exotic plants infest some 2.6 million acres in the National Park System, reducing the natural diversity of these places. With funding provided by the Natural Resource Challenge, the National Park Service is establishing Exotic Plant Management Teams (EPMTs) to control exotic plants.

Modeled after the teams used to fight wildfires, EPMTs are designed to provide a highly trained, mobile strike force of plant management specialists to assist parks in the control of exotic plants. Nine EPMTs were established between FY 2000 and FY 2002, and seven are proposed to be added in FY 2003. In 2002 the teams served over 95 parks and treated over 100 species of harmful invasive plants on 68,000 infested acres, and monitored over 34,000 acres. Six species of exotic plants have been eradicated from parks since the establishment of EPMTs.

The EPMTs use an integrated pest management (IPM) approach to exotic species control. Integrated pest management embraces every appropriate control method.

The EPMT concept is validated by the enthusiastic support of our partners. Every dollar spent on exotic species control by the Florida EPMT is matched by the State of Florida. Partnerships with three federal agencies, and Nevada State Parks and Clark County, Nevada, allowed the Lake Mead EPMT to double its crew to 15 people, enabling them to greatly increase the number of acres treated.

The State of Hawaii established the Emergency Environmental Workforce to provide employment to displaced workers in the tourism industry. The 17 workers provided by the state contributed 5,380 hours to the Hawaii EPMT. The primary target for their efforts was *Miconia calvescens*, an aggressive tree from Central America that is poised to overrun the pristine rain forest in Haleakala National Park.

Stemming the spread of exotic species is critical to protecting the health and natural heritage of our national parks. EPMTs are meeting this challenge.

For information

www.nature.nps.gov/epmt and
www.nature.nps.gov/challenge/nrc.htm.

Rocky Mountains Cooperative Ecosystem Studies Unit

The Rocky Mountains Cooperative Ecosystems Studies Unit (RM-CESU) operates independently and in association with a national network of CESUs. The partnership is directed by specific mission, vision, goals and objectives. To download the complete version of governing documents, click here.

Mission & Vision

The mission of the Rocky Mountains Cooperative Ecosystem Studies Unit is to improve the scientific base for managing ecosystems in the rapidly changing social, cultural, and environmental landscape of the Rocky Mountain Region, and to extend its expertise to national issues where appropriate.

With rapidly growing and urbanizing populations the Rocky Mountain Region presents opportunities for innovative and creative resource management informed by science. The Rocky Mountains CESU brings the best scientific talent of the region to bear on solving resource problems across social, cultural, economic, political, and environmental arenas. It is visualized as a partnership to aid in the development and transmission of scientific information to land managers through research, education, and technical assistance.

Goals

- Identify research, education, and technical assistance needs of the federal land management agencies in the Rocky Mountain Region.
- Cooperate in the development and implementation of research, education, and technical assistance projects.
- Coordinate research, education and technical assistance projects among member agencies and academic institutions.
- Facilitate opportunities for student research, internships, and education that are pertinent to the needs of management agencies.
- Make the RM-CESU an operationally effective and publicly visible organization.

Objectives

- Provide research, technical assistance and education to federal land management, environmental and research agencies and their potential partners
- Develop a program of research, technical assistance, and education that involves the biological, physical, social, and cultural sciences needed to address resources issues and interdisciplinary problem-solving at multiple scales and in an ecosystem context
- Place special emphasis on the working collaboration among federal agencies and universities and their related partner institutions.

RM-CESU National Theme: Wilderness

Top of Page

rmcesu@forestry.umt.edu

WESTERN ENVIRONMENT AND ECOLOGY, INC

OFFICES IN DENVER AND GRAND JUNCTION, COLORADO

AND SAN JOSE, COSTA RICA, C.A.

July 8, 2003

Alexa Roberts, Ph,D.
Project Manager
Sand Creek Massacre National Historic Site
P.O. Box 249
Eads, Colorado 81036

Subject: Evaluation of 1860's Range Conditions, Sand Creek Site. Western Environment and Ecology, Inc. Project Number 322-001-01.

Dear Dr. Roberts:

Please find enclosed our evaluation of potential 1860 range conditions at the Sand Creek site. The vegetation and animal narrative descriptions are taken from the "Notes of Lieutenant J.W. Abert" published in 1848, in Appendix VI of Lieutenant William H. Emory's "Notes of a military reconnaissance" U.S. 30th Cong., 1st Sess., House Exec. Doc. 4: No. 41, 1-614. The description of the grasses, which was lacking in the 1848 account, was taken from the 1981 USDA, Soil Conservation Service, Soil Survey of Kiowa County, Colorado.

We have identified three eco-zones that exist on the project. These are the Sand Hills that occur southwest of Big Sandy Creek, the flood plain/terrace adjacent to the creek, and short-grass prairie northeast of the creek. We feel that these areas are distinctive and play an important part in the unique ecosystem of the project. As such, the vegetation evaluation is divided into these three zones.

Western Environment included a Canopy Cover Class for the vegetation inventory. The Cover Class was our interpretation of the Abert narrative descriptions and the Soil Conservation Service range type and condition evaluation. The reason we choose to use the Canopy Cover Class was to facilitate the performance of vegetation transects using the attached Rangeland Inventory Transect Method. Other methods are available and widely used. However, the Cover-Frequency method can be performed with a minimum amount of training and still produce a quantitative statistical analysis.

We hope that this evaluation will be used as a starting point for discussion of the 1860 range conditions. I would anticipate numerous modifications to the list following input from the interested parties. Thank you again for the opportunity to provide this information. As always, feel free to contact us with any questions.

Sincerely,

Greg D. Sherman
President
att.

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(Flora descriptions cont.)

devil's claw (unicorn plant)	
stinkweed	
pickleweed	
buckwheat	
cottonwoods	"several varieties"
Salix	"several varieties"
plum and cherry	
gourd	"numerous"
tree cholla	

*Species found in Soil Survey of Kiowa County, Colorado and not found in historical literature

Range Vegetation Cover Classes and Ecosystems from 1860's

Common Name	Scientific Name	Cover Class	Ecosystem
blue grama*	*Bouteloua gracilis*	2	sandhills
sand dropseed*	*Sporobolus cryptandrus*	2	sandhills
prairie sandreed*	*Calamovilfa longifolia*	2	sandhills
sand sagebrush*	*Artemisia filifolia*	2	sandhills
sand bluestem*	*Andropogon hallii*	2	sandhills
little bluestem*	*Andropogon scoparius*	1	sandhills
bull thistle	*Cirsium vulgare*	1	sandhills
cactus	*Cacti* sp.	1	sandhills
red Indian blanket	*Gaillardia amblyodon*	1	sandhills
sagebrush	*Artemisia* spp.	2	sandhills
screwstem	*Bartonia* sp.	1	sandhills
Ceanothera	*Ceanothus* spp.	1	sandhills
devil's claw	*Proboscidea louisianica*	1	sandhills
stinkweed	*Cleomella* sp.	1	sandhills
buckwheat	*Erigonum* spp.	1	sandhills
tree cholla	*Opuntia imbricata*	1	sandhills
alkali sacaton*	*Sporobolus airoides*	2	floodplain/terrace
inland saltgrass*	*Distichlis spicata*	2	floodplain/terrace
blue grama*	*Bouteloua gracilis*	2	floodplain/terrace
sand dropseed*	*Sporobolus cryptandrus*	2	floodplain/terrace
prairie sandreed*	*Calamovilfa longifolia*	2	floodplain/terrace
western wheatgrass*	*Agropyron smithii*	1	floodplain/terrace
sand sagebrush*	*Artemisia filifolia*	1	floodplain/terrace
bulrush	*Scirpus* sp.	1	floodplain/terrace
scouringrush	*Equisetum* sp.	1	floodplain/terrace
blazing star	*Liatris* sp.	1	floodplain/terrace

COVER-FREQUENCY TRANSECT METHOD

In most cases, this will be the standard vegetative inventory method for the Rocky Mountain Region. The cover-frequency transect is designed to provide quantitative vegetation data at a plot. It is used when a replicated sampling design and statistical analysis are required or there is a need to calibrate ocular estimates. In this method, canopy cover and frequency by species, ground cover, and production by life form are estimated through replicated sampling of plot frames along a transect. ***Two forms must be completed for the Cover Frequency Transect Method: General Field Data Form (R2-2200-34) and Cover/Frequency Data Form (R2-2200-37)***

This is relatively fast and easy to learn. Use this method for low shrubs and herbaceous species. (Use the line intercept method for shrubs over 2-3 feet tall.) This method requires the placement of twenty plot frames at 5 foot intervals along a 100-foot tape. The standard for this Region will be to place the plot frames at 5 foot intervals beginning at the 0-foot mark on the tape. The lower left corner of the plot frame will be placed adjacent to the appropriate foot mark on the tape as shown in Figure 3-6. At least two transects should be installed on the benchmark to describe the existing plant community.

Estimates of ground cover and canopy cover by species are made and recorded using six standard cover classes (Table 3-10). Also estimate various ground cover categories such as bare soil, litter, small gravel (<1 cm), rock, moss and lichens.

Table 3-10. Canopy Cover Classes (Daubenmire).

COVER CLASS	RANGE	MIDPOINT
1	0-5%	2.5%
2	6-25%	15.0%
3	26-50%	37.5%
4	51-75%	62.5%
5	76-95%	85.0%
6	96-100%	97.5%

Instructions for Reading Canopy Cover from Plot Frames

Objective. Canopy cover is two-dimensional evaluation of the influence each plant species exerts over other components of the ecosystem, that is, the species' dominance.

Equipment.

1. A plot frame of 20 x 50 cm painted to indicate the 6 standard cover classes as described by Daubenmire (see Figure 3-7).
2. 100-foot tape marked in feet and tenths of feet.
3. Stakes for tape ends (large screw drivers with orange or yellow handles work well).
4. Use Form R2-2200-37.

The frame is made of 1/2 in PVC. The inside dimensions of the frame are 20 x 50 cm. The frame is open-ended to facilitate placement under dense or tall vegetation.

The six cover class frame is divided into fourths by painting alternate sections of the frame different colors as illustrated. Use orange and white or red and white paint.

In one corner of the frame, delineate two sides of an area 71 mm square as illustrated. This area represents 5 percent of the plot area.

The painted design provides visual reference areas equal to 5, 25, 50, 75, 95, and 100 percent of the plot area.

FIGURE 3-7. COVER-FREQUENCY FRAME (20 X 50 CM)

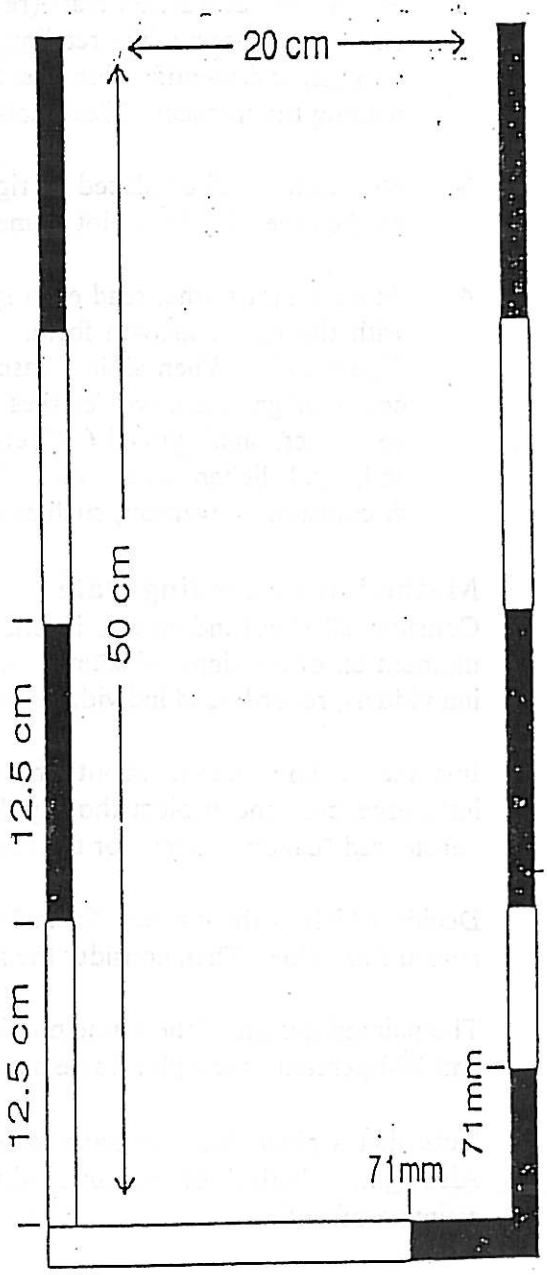
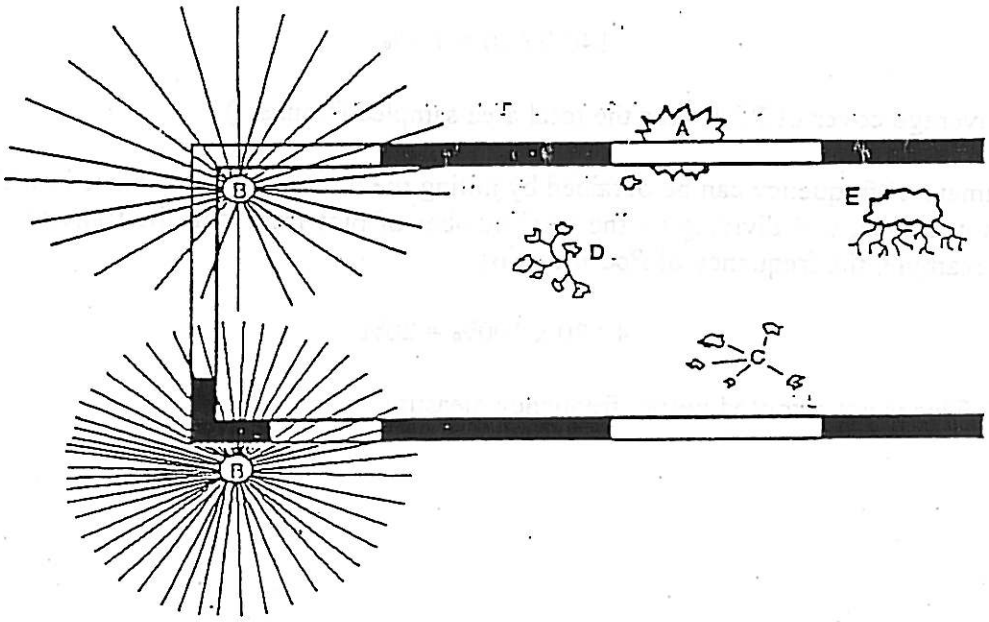


Figure 3-8.

Live Foliar Coverage Diagram



Estimating Canopy Cover Classes (example)

Species A - Cover class 1 (0-5% cover) Estimate cover inside the frame even though base of plant may be outside frame 2.5

Species B - Cover class 3 (25-50% cover) 37.5

Species C - Cover class 1 (0-5% cover)

Species D - Cover Class 2 (5-25% cover) 15

Species E - Cover class 1 (0-5% cover) Note: Do not count dead cover

COVER/FREQUENCY DATA (CM)

F1-7: ____ -- ____ -- ____ -- ____ -- ____ -- ____ -- ____ ____

Plot ID Agency Region Forest District Year Exam'r Plot Number

F8 PID __ __	F9 # Tran __ __	F10 M/T __ __	F11 MRL __ __ . __	F12 PW __ __ . __	F13 NFR __

	F14 LF	F15 Item	F16 TrN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	SCC	F17 ACC	F18 N	F19 SRF
1																											
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
Req		LITTER																									
Req		MOSS																									
Req		BAREGRND (<.125 in)																									
Req		GRAVEL (.125-3.00 in)																									
Req		ROCK (>3.00 in)																									